

AN ANALYSIS OF SOME ECONOMIC FACTORS AFFECTING
THE MEAT-PACKING INDUSTRY IN KANSAS

by

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INTRODUCTION

The meat-packing industry is one of the leading industries in this country. Its welfare is of direct concern to farmers, consumers, and other groups in the state of Kansas and in the United States. Hence, it is entirely fitting that a study of this industry in Kansas should be a part of the program of industrial research. To this end there has been established at Kansas State College a research project entitled "The Economics of the Meat-packing Industry in Kansas." Owing to the great breadth of the industry, many economic factors are involved.

Some of the economic phases of the industry were investigated by Paul whose study included an extensive review of the literature and an analysis of factors affecting the location of the meat-packing industry. Among other things, Paul pointed out that if the cost of transporting meat is less than that of shipping live animals, the location of the meat-packing plant will be near the source of supplies./15

The volume of livestock supplies, the dependability of those supplies, and the degree of seasonal variation in marketing are important factors in determining the desirability of Kansas as a location for meat-packing plants. Also, since the meat-packing industry requires relatively large numbers of skilled and semi-skilled laborers, the availability of labor would seem to be another factor in determining the prosperity of the industry in Kansas. Of the many economic factors that affect the meat-packing industry, two, namely, livestock supplies and labor, will be considered in some detail in this study with a view of obtaining information that will be helpful to the packing industry and that will contribute to a more general understanding of the broad problems of the industry.

SOURCES OF DATA

In the section dealing with livestock supplies, the data were obtained largely from state and federal publications. Census data and reports from the United States Department of Agriculture and the Kansas State Board of Agriculture have provided most of the basic material for this part of the study. The basic data for the section on labor came largely from material made available by the Labor Department of the state of Kansas. Original data from packing plant records were not available.

REVIEW OF LITERATURE

As stated, the literature concerning the economics of the meat-packing industry was reviewed recently by Paul. The desirability of locating meat-packing plants near the source of livestock supplies has been recognized and historic trends of the location of facilities would bear out this recognition./15 Dowell and Bjorka attributed the increasing importance of interior packers to the fact that it was more economical, in general, to locate near the source of supplies./3 The increasing importance of central Iowa as a packing region was attributed to this fact by McCarty and Thompson./14 A rather thorough analysis of trends in livestock slaughter by regions but not with specific application to Kansas was made by Bjorka./2 By using Census data, Baker showed graphically the location of livestock numbers in the United States./1 A rather clear picture of the location of the livestock production and feeding areas in the western United States, which includes Kansas, has been given by Mann./13

Shifts in livestock production in Kansas up to 1928 were studied critically by Hodges./8 Reed also made an analysis of trends in livestock

production for more recent years./16 In neither case was the analysis specifically related to the livestock slaughtering industry.

Little analysis has been made of the labor situation in regard to the meat-packing industry. The problem of efficient use of labor in packing plants has been indicated by The National Provisioner. It was pointed out that the efficiency of a packing plant is determined to a large extent by the effectiveness with which labor can be used. In large packing plants where workers are employed in a great variety of operations under the supervision of foremen, many opportunities to reduce labor costs have been overlooked./17

In considering the problem of unproductive labor in packing plants, The National Provisioner indicated that much labor is used in the packing industry which does not contribute directly to the processing and manufacturing of meat products. It was the opinion of The National Provisioner that there was a great opportunity to reduce costs by giving careful attention to the reduction of unproductive labor in plants./20

LIVESTOCK SUPPLIES

A fundamental factor affecting the prosperity of the meat-packing industry is the volume of livestock available for slaughter. However, in addition to adequate volume over a long period, packers are interested in a constant year-to-year, and month-to-month flow of livestock. A minimum of fluctuation in supplies between years and between months enables packers to utilize more fully the capacities of their plants.

Trends in Livestock Numbers within Kansas

The trend in numbers of cattle, feed grains in corn equivalent tons, and the average annual precipitation in Kansas since 1875 are shown in Fig. 1. Precipitation has been included as it is probably the best available measure of pasture condition in early years. Feed grains and precipitation have been lagged one year behind cattle numbers as the quantities of each available in the previous year affects cattle numbers in the current year.

Cattle numbers increased sharply from approximately 1,000,000 head in 1875 to 4,000,000 head in 1903 and then declined to a cyclical low of about 2,500,000 head in 1914. It is highly significant that since that time cattle numbers in Kansas have never fluctuated out of this range. The decline from 3,800,000 head in 1934 to 2,600,000 head in 1938 is entirely within a normal cycle. However, it is true that this was the most rapid cyclical drop that has occurred. Also, it is apparent that the recent decline was a result of the severe droughts of 1934 and 1936, which caused feed shortages and resulted in substantial losses to those cattlemen who had inadequate reserve supplies of feed. The rapid drop in feed production from 1905 through 1913 was an important factor causing the sharp liquidation of cattle during that period. These data substantiate the need for emphasis on encouraging the holding over of feed in years of abundance.

Beef cattle occupy a prominent place in Kansas agriculture. On January 1, 1941, Kansas ranked fourth in the United States in numbers of beef cattle on farms. Texas ranked first with approximately 6,000,000, Iowa second with 3,000,000, Nebraska third with 2,150,000, and Kansas fourth with 2,112,000 head. In 1940, approximately 28 percent of the cash income of Kansas farmers came from cattle and calves.

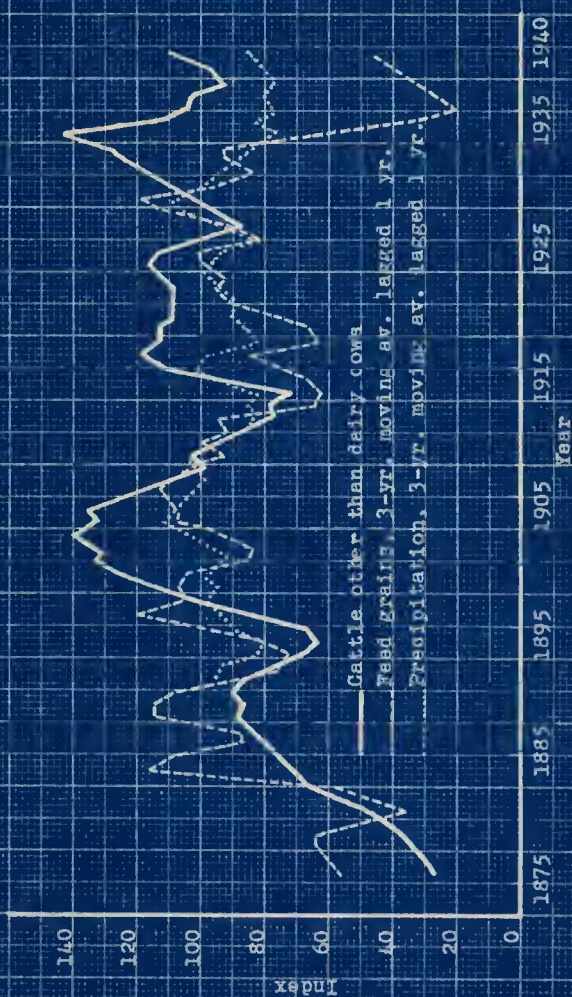


Fig. 1 Indexes of number of cattle other than milk cows on farms January 1, feed grain production, and annual precipitation in Kansas, 1876-1939.

Base equals average of years 1925-1929.

1925-1929 Bases Used

| Item | Actual Base |
|--------------------------|----------------|
| Cattle other than dairy | 1,957,000 head |
| Feed grains | 4,663,000 tons |
| Av. annual precipitation | 28.73 inches |

From 1930 to 1934, numbers of cattle were generally increasing in Kansas, the North-Central States, and the United States as a whole. In 1930, the index of numbers of "other cattle" in Kansas, based on an average of the period 1925-1929 as 100, stood at 110. For the North-Central States the same index was 104, and for the United States it was 102. The peak in cattle numbers during this period came in 1934 when the index for Kansas had risen to 133, a gain of 23 points over 1930. In that same year occurred the peak in the North-Central States and in the United States, the index being 127 for both areas, representing a gain of 23 points for the North-Central States, and a gain of 25 points for the United States as a whole.

Beginning in 1935 there was a general decline in cattle numbers. This decline was more severe in Kansas than in the other regions examined. By 1938, the index of cattle on farms in Kansas had fallen to 93, a loss of 45 points from the 1934 high. In the North-Central States the index stood at 102, a loss of but 18 points, and for the United States as a whole, the index was 111, a loss of but 16 points.

During 1940, the number of beef cattle on farms in the United States increased by about six percent. On January 1, 1941, there were 34,275,000 beef cattle on farms in the United States compared to 32,187,000 last year. While numbers increased in nearly all states, the greatest increases were in the West North-Central States.

In Kansas, the number of beef cattle on farms January 1, 1941, was 115 percent of the 1940 figure. The actual number of beef cattle on farms was estimated at 2,112,000 compared with 1,842,000 for 1940.

The decline in cattle numbers since 1934 over the state was fairly uniform, most counties losing from five to 10 head per square mile. The southeast corner of Kansas, as far west as Coffey and Montgomery Counties, and as far north

as Johnson County, suffered the least decline in cattle numbers.

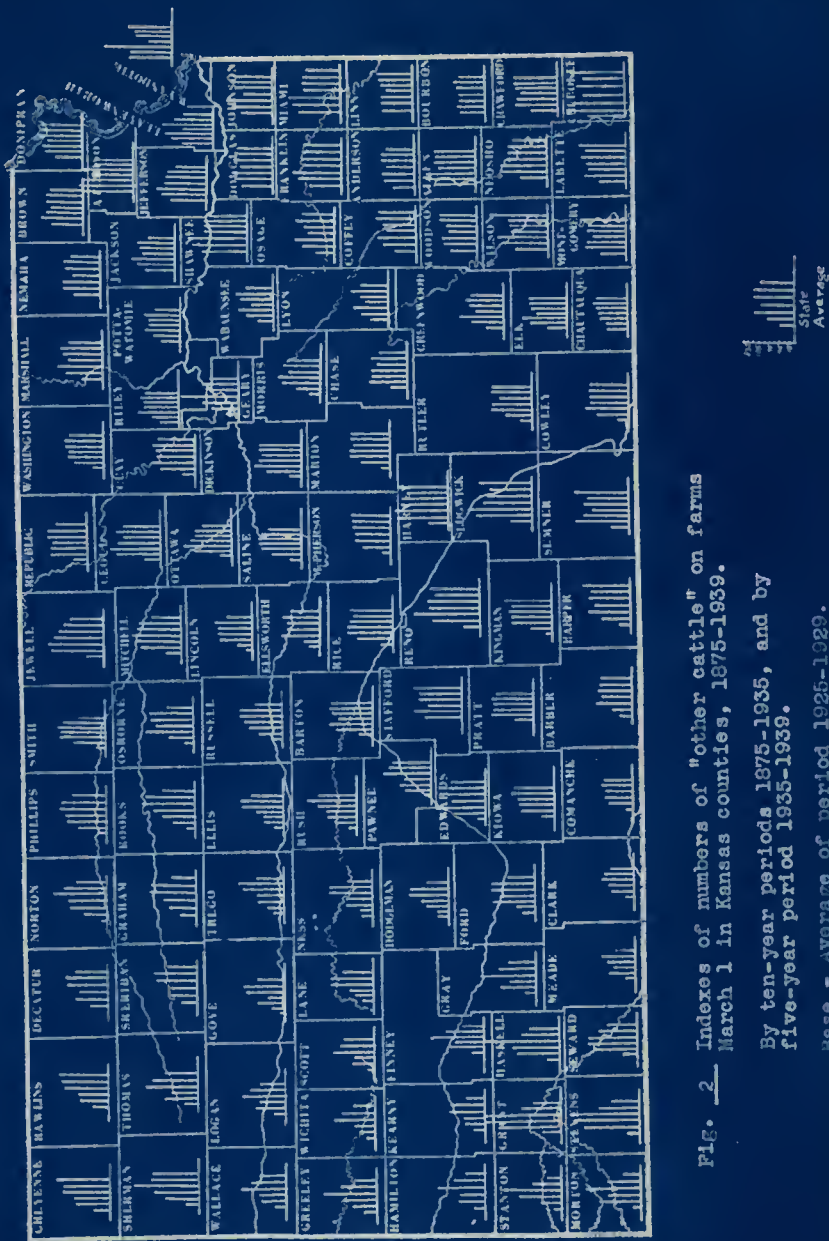
The counties through the Flint Hills region suffered, as a whole, the greatest loss in cattle numbers, losing as an average slightly more than 10 head per square mile during the period 1935-1939. Another area having relatively heavy losses was just northwest of the Flint Hills, extending as far west as Phillips County on the north and Cove and Trego Counties on the south. Another pasture area: Meade, Clark, Comanche, and Barber Counties, lost more than 10 head per square mile. The number of cattle on farms in the sugar beet area around Garden City also declined more than the average for the state during this period.

Figure 2, based on data obtained from the files in the Department of Economics and Sociology, Kansas State College, illustrates the trend in the numbers of "other cattle" in Kansas, by counties, for the period since 1875.

In the period from 1875 to 1885, the production of "other cattle" in Kansas was relatively unimportant in the western three-fourths of the state. During the next 10 years, the peak in "other cattle" numbers was reached in most counties in the eastern quarter of the state, while the production of cattle had reached an important position over the whole of the eastern two-thirds of the state. During the period 1895 to 1905, there was a general increase in cattle numbers over the state, and the peak in "other cattle" numbers was reached in the remaining eastern counties, and in many of the counties in the east-central part of the state.

It was during the period from 1915 to 1924, that the peak in cattle numbers occurred for most of those counties in the western third of the state, and for those counties in the eastern two-thirds which had not already reached their peak.

Some significant shifts in the cattle population within the state of



Kansas have occurred during this 65 year period.

In general, cattle numbers have been relatively stable throughout the eastern third of the state. This has been especially true for the Flint Hills region. Throughout the Flint Hills, cattle early assumed the important position in the agriculture of this region which they hold today. By 1835, cattle numbers throughout the Flint Hills were comparable to those of today. In most counties the peak in cattle numbers was reached during the period extending from 1885 to 1895, and since that time, the production of cattle has remained relatively stable.

There was a greater variation in cattle numbers in the areas west of the Flint Hills during this period. In the northwest quarter of the state, cattle numbers were generally increasing up until the drought of 1934. Cheyenne and Rawlins Counties, in the extreme northwest corner of the state stand out in this area in that the production of "other cattle" was increasing at a fairly rapid rate until the drought. Since 1935, the number of cattle in these two counties has decreased, but the average number for the period 1935-1939 was still above the average for the previous 10-year period.

The southwest quarter of the state has had the most extreme variation in the numbers of "other cattle". The peak, occurring in the period 1915-1924, was extremely high, but since that time the number of cattle in this section has declined sharply.

Figure 3 and Table 1 represent the trend in cattle numbers by classes since 1920. It will be noticed that of the various classes of beef cattle in Kansas, the number of steers has declined the sharpest. In the period since 1920, the number of steers on farms January 1, reached a high in 1924 when numbers were 26 percent more than the 1925-1929 base. Since that time, the

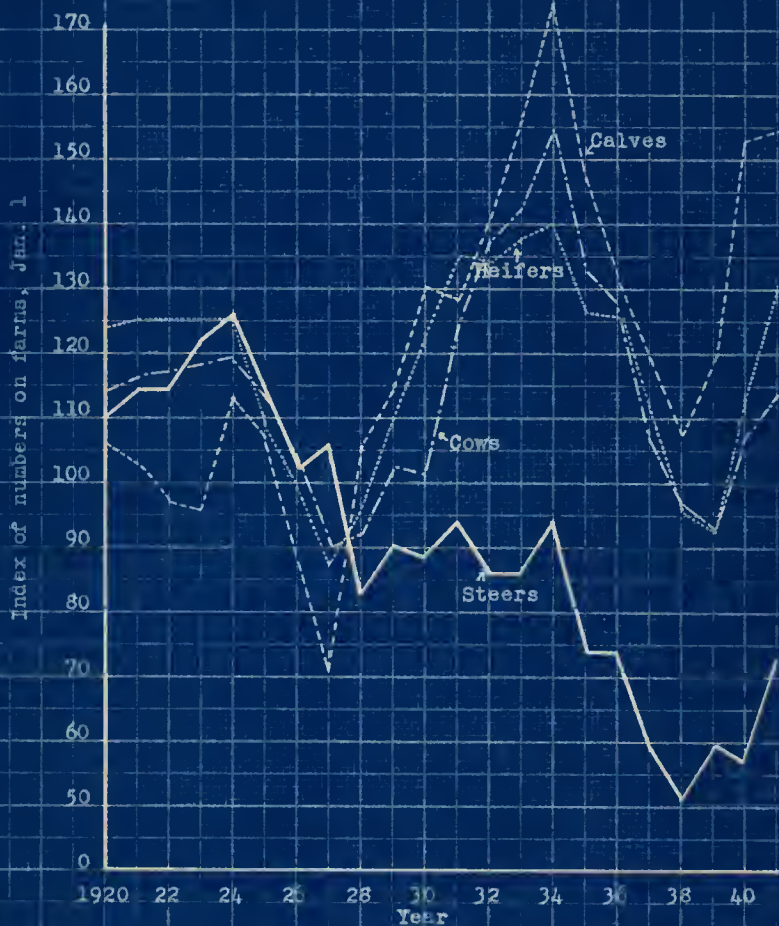


Fig. 3 Indexes of numbers of "other cattle" on Kansas farms, January 1, by classes, 1920-1940. 10

Average of period 1925-1929 equals 100.

number of steers declined steadily to an index of 52 in 1938, advanced to within about 26 percent of the base in 1941.

Table 1. Indexes of numbers of "other cattle" in Kansas on January 1, by classes - 1920-1941./10

| Year | : Cows | : Heifers | : Calves | : Bulls | : Steers | : Total cattle : including milk cows |
|------|--------|-----------|----------|---------|----------|---|
| 1920 | 113.9 | 124.4 | 105.8 | 112.0 | 109.7 | 104.1 |
| 1921 | 115.6 | 125.0 | 102.5 | 113.7 | 113.5 | 105.4 |
| 1922 | 116.6 | 125.0 | 96.5 | 115.5 | 113.5 | 104.7 |
| 1923 | 117.9 | 125.0 | 95.6 | 115.5 | 121.5 | 107.0 |
| 1924 | 119.3 | 125.0 | 113.3 | 115.5 | 126.0 | 112.0 |
| 1925 | 113.1 | 107.9 | 106.0 | 110.3 | 114.7 | 107.4 |
| 1926 | 103.3 | 98.8 | 101.7 | 100.0 | 102.1 | 101.4 |
| 1927 | 89.5 | 86.9 | 71.2 | 94.8 | 106.1 | 92.3 |
| 1928 | 91.6 | 96.5 | 105.8 | 94.8 | 82.0 | 95.6 |
| 1929 | 102.5 | 110.7 | 115.2 | 101.7 | 90.4 | 103.1 |
| 1930 | 101.4 | 122.7 | 130.4 | 106.8 | 89.2 | 108.1 |
| 1931 | 123.7 | 134.6 | 128.0 | 117.2 | 93.8 | 113.7 |
| 1932 | 137.0 | 133.5 | 141.0 | 115.5 | 86.4 | 119.3 |
| 1933 | 142.0 | 138.0 | 157.2 | 122.4 | 86.2 | 125.3 |
| 1934 | 154.7 | 140.3 | 174.0 | 125.8 | 94.6 | 135.1 |
| 1935 | 133.3 | 125.0 | 146.0 | 127.5 | 74.3 | 118.5 |
| 1936 | 127.9 | 125.0 | 131.4 | 120.6 | 73.9 | 112.6 |
| 1937 | 106.2 | 110.7 | 118.5 | 110.3 | 59.7 | 99.2 |
| 1938 | 96.8 | 96.5 | 107.0 | 106.8 | 51.7 | 91.2 |
| 1939 | 92.7 | 92.1 | 119.5 | 106.8 | 59.9 | 94.9 |
| 1940 | 108.5 | 114.7 | 152.9 | 113.7 | 57.0 | 107.2 |
| 1941 | 114.1 | 132.3 | 153.9 | 120.6 | 73.9 | 113.7 |

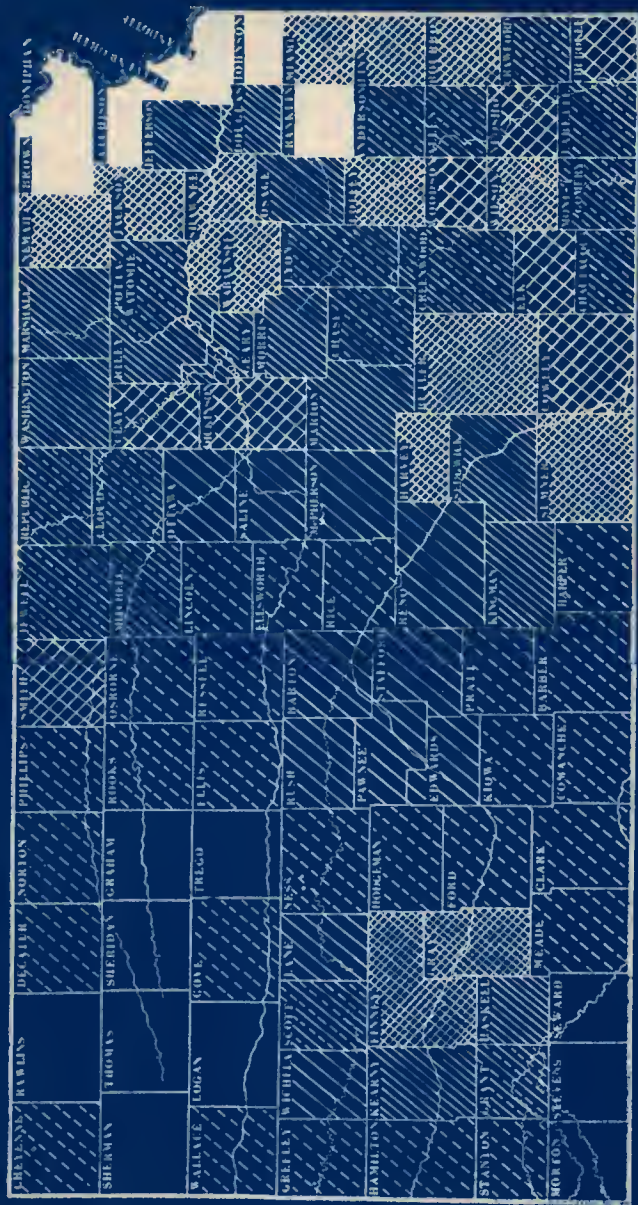
In this same period, the index for cows, heifers, calves and bulls reached a low in 1927; the index for cows two years old and over dropped to 89, beef heifers to 87, calves to 71, and bulls to 95. From 1927 to 1934 the numbers of cows, heifers and calves increased greatly to 155, 140, and 174, respectively. The droughts of 1934 and 1936 caused a sharp decrease, the index for cows and heifers dropping to 92 in 1939. However on January 1, 1941, the index for cows had advanced to 114, heifers to 132, and calves to 154. This indicated a rapidly expanding cattle population, the index for heifers being higher than that for cows, and the index for calves being higher than that for heifers--the result of holding back heifers and calves for future breeding purposes.

The percentage of cattle sold off farms for slaughter cannot be taken as an accurate indication of the importance of an area as a producer of beef. However, it does indicate the predominant method of handling cattle in an area, and this, together with the number of cattle produced, does indicate the general importance of the area as a source of cattle to the packer.

Figure 4 indicates that the percentage of cattle sold for slaughter tended to be greatest in the northeastern corner of the state.¹ In the group of counties bordering on Sedgwick County, the relatively high percentage of cattle going for slaughter was probably more nearly traceable to the presence of the existing market at Wichita, with its accompanying meat-packing facilities. The area around Garden City depended for feed upon the beet pulp from the sugar beet refinery located there, and this industry probably was largely responsible for the high percentage of cattle sold for slaughter in this area.

Although the percentage of cattle being sold for slaughter off farms indicated the predominant method of handling cattle within a county, it failed to give any concept of the relative importance of that particular county as a producer of beef. Figure 5 shows that the production of slaughter beef tended to be most concentrated throughout the central part of the Flint Hills region, and in Doniphan County in the northeastern corner of the state. The following counties had more than 22,500 pounds of beef cattle available for slaughter per square mile on January 1, 1939: Riley, Geary, Nabaunsee, Morris, Osage, Coffey, and Butler. Doniphan, Franklin, Lyon, Marion, and Harvey Counties each had more than 20,000 pounds but less than 22,500 pounds of beef cattle available for slaughter per square mile on January 1, 1939. Chautauqua, Greenwood, Chase, and Shawnee Counties had from 17,500 to 20,000 pounds per square

¹Information was obtained from questionnaires mailed to bank presidents, supervisors for the Farm Security Administration, and secretaries of the Production Credit Association in Kansas, 1940.



Percentage



Fig. 4. Percentage of total steers and heifers produced or fed in Kansas counties that were sold for slaughter in 1939.

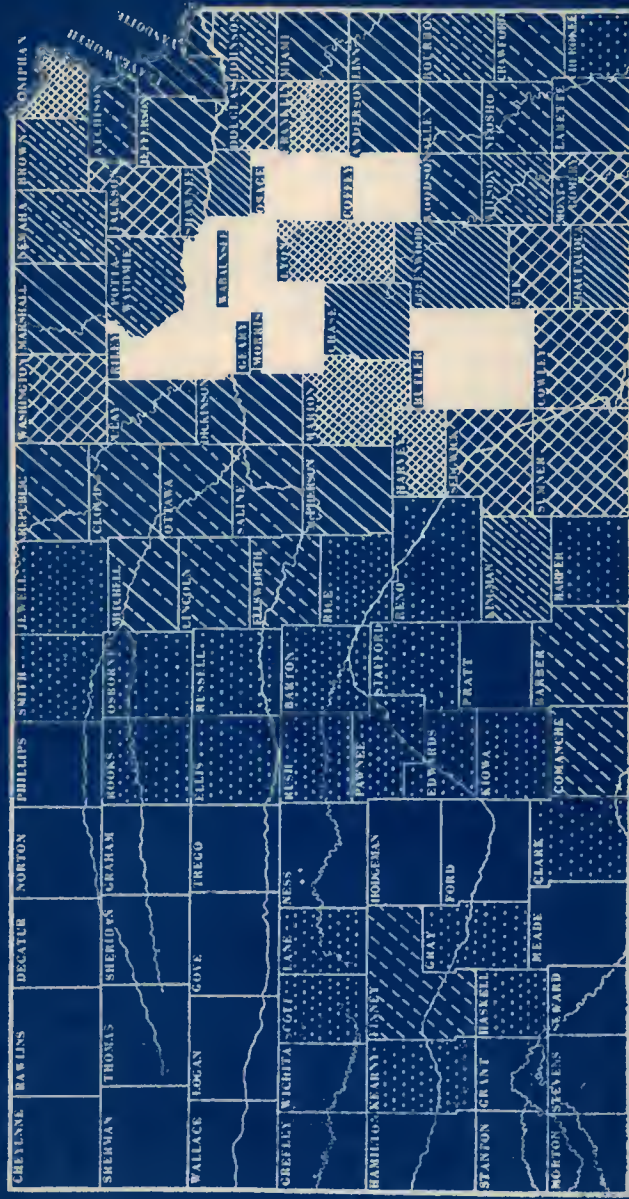


Fig. 5. Pounds of beef cattle per square mile in Kansas counties January 1, sold for slaughter in 1939.

Pounds per square mile

22,500 or over

12,500-14,499

5,000-7,499

20,000-22,499

10,000-12,499

2,500-4,999

17,500-19,999

7,500 - 9,999

2,500 or less

15,000-17,499

mile on the same date. West of Mitchell and Lincoln Counties on the north and Kingman County on the south, the production of beef cattle for slaughter was relatively unimportant, only three counties producing more than 5,000 pounds of available slaughter per square mile. These three counties: Finney, Commanche, and Barber, fell in the class with those counties producing from 5,000 to 7,500 pounds of beef available for slaughter per square mile. Except for the feeding area including Finney County, the western one-third of Kansas produced less than 2,500 pounds of slaughter cattle per square mile.

The outstanding feature regarding the hog population in Kansas has been the precipitous decline in numbers since 1933. The number of hogs on farms in Kansas in 1934 was more than 3,000,000 head while in 1941 there was less than half that number. The low in hog numbers was reached in 1938 when there were slightly more than 600,000 head.

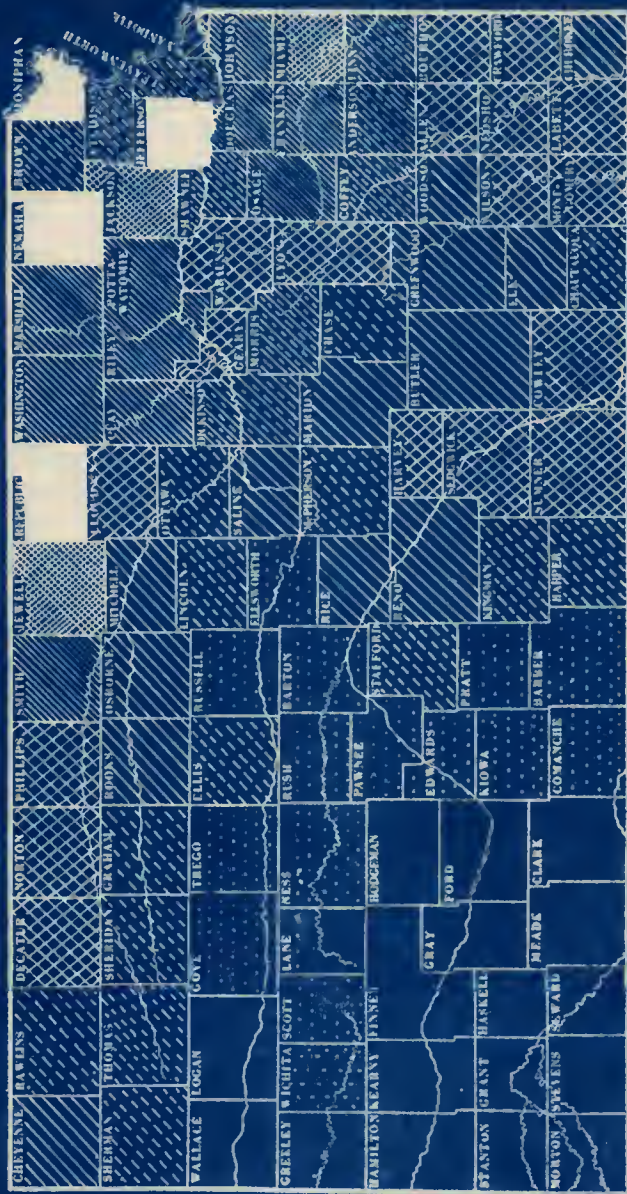
Although there was a general decline in the number of hogs throughout the entire United States during this period, the decline in Kansas was much greater than for the nation as a whole. While by 1941 the number of hogs for the nation as a whole had recovered entirely from the decline of the thirties, the hog population of Kansas was still low.

On January 1, 1933, the index of hog population in Kansas, based on the average of the years 1925-1929 inclusive as 100, stood at 127, compared with 106 for the North-Central States of which Kansas is one, and 109 as the index for the United States as a whole. One year later, on January 1, 1934, the same index of hog numbers stood at 98 for Kansas, a loss of 29 points as compared to an index of 100 for the North-Central States, a loss of only six points, and 103 for the United States, an identical loss with that of the North-Central States.

The bottom of the decline for the North-Central States and the nation as a whole came in 1937. That year, the index for the North-Central States had declined to 64, 42 points below the 1933 figure; the index for the entire United States stood at 75, a loss of only 30 points; while in Kansas the index had fallen to 35 or 92 points below the 1933 level. The low for Kansas was in 1938 when the index of hog numbers reached 32 or 95 points below the high of 1933. For the United States as a whole, the number of hogs on farms January 1, 1941, was about 12 percent less than a year earlier, the actual number January 1, 1941, being 52,963,000.

In Kansas the decrease in numbers of hogs on farms January 1, 1941, compared with January 1, 1940, was 18 percent. There were 1,246,000 hogs on Kansas farms January 1, 1941. This percentage decline in hog numbers was exceeded only by Colorado, Utah, and Nebraska and was equalled by Alabama. Kansas ranked eleventh in the United States in hog numbers on January 1, 1941, while as an average for the period 1930-1939, it ranked eighth.

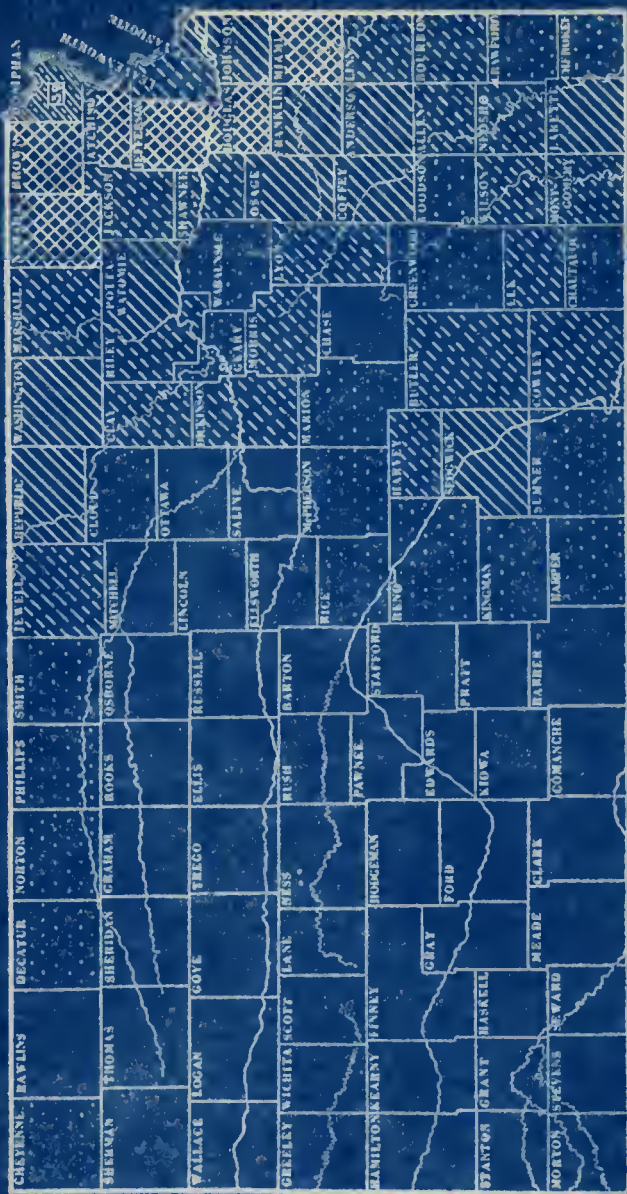
Figures 6 and 7 show that within the state of Kansas itself, this decrease in hog numbers tended to vary from one section to another. As might be expected, those counties having the most dense hog population suffered the greatest losses. In those counties having an average of 60 or more hogs per square mile during the 10 years preceding 1935, the average decrease in hog numbers for the period 1935-1939 was 39 head per square mile. In the next lower group, those having from 50 to 60 hogs per square mile, this loss was 37 head. In the group having from 40 to 50 hogs per square mile, the loss was 27 head per square mile. In those counties having but 30 to 40 hogs per square mile in the earlier period, the loss was but 17 head. Those counties having an average of 20 to 30 hogs per square mile lost 12 head, those with 15 to 20 hogs only 10, and below this level the loss was such that it had little



Legend



Fig. 6 All hogs, number per square mile, Mar. 1.
(average of years, 1925-1934).



Legend

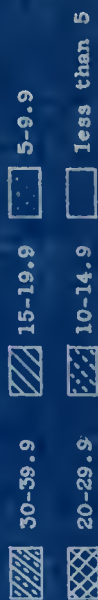


Fig. 7 All hogs, number per square mile, Mar. 1.
(average of years, 1935-1939).

affect on the classification into which the county would fall.

Thus, it can be seen that the decrease in hog numbers was greatest in those counties where conditions had formerly been the most favorable for the swine enterprise. In effect, this decline in hog numbers has served to even out somewhat the areas of surplus and deficit hog production within the state. This has been brought about by the fact that the loss in numbers occurring in the thirties fell more heavily on those areas having a relatively dense hog population than it did on those areas having fewer hogs.

There are two areas within the state which were of particular interest insofar as changes in the production of hogs are concerned. The first of these is interesting because it has suffered the most severe loss in hog numbers during the last five years. This area extends from Brown County west along the northern tier of counties to Decatur County. During the five years 1935-1939, inclusive, this group of counties lost 20 percent more hogs than the average of all counties having a similar density of hog numbers in the period 1925-1935. Of these counties, Phillips and Norton suffered the greatest loss, losing respectively 92 percent and 71 percent more hogs than the average.

The other group of counties is interesting because it suffered a less severe loss than did the other sections of the state and consequently has improved its position relative to other areas in hog production. This area includes the following counties: McPherson, Chase, Harvey, Reno, Kingman, Sedgwick, Butler, Greenwood, Cowley, Elk, Chautauqua, and Sumner. During the five years 1935-1939, inclusive, this group of counties lost 16 percent less hogs than the average of all counties having similar density of hog population. Of these counties, the smallest losses occurred in McPherson and Sedgwick. McPherson lost 34 percent less than the average, and Sedgwick lost 30 percent less.

Hog production in Kansas on a commercial scale was definitely limited to the eastern third of the state. With the exceptions of Jewell and Republic Counties, there were less than 10 hogs per square mile in all of Kansas west of Clay County on the north and Sedgewick County on the south.

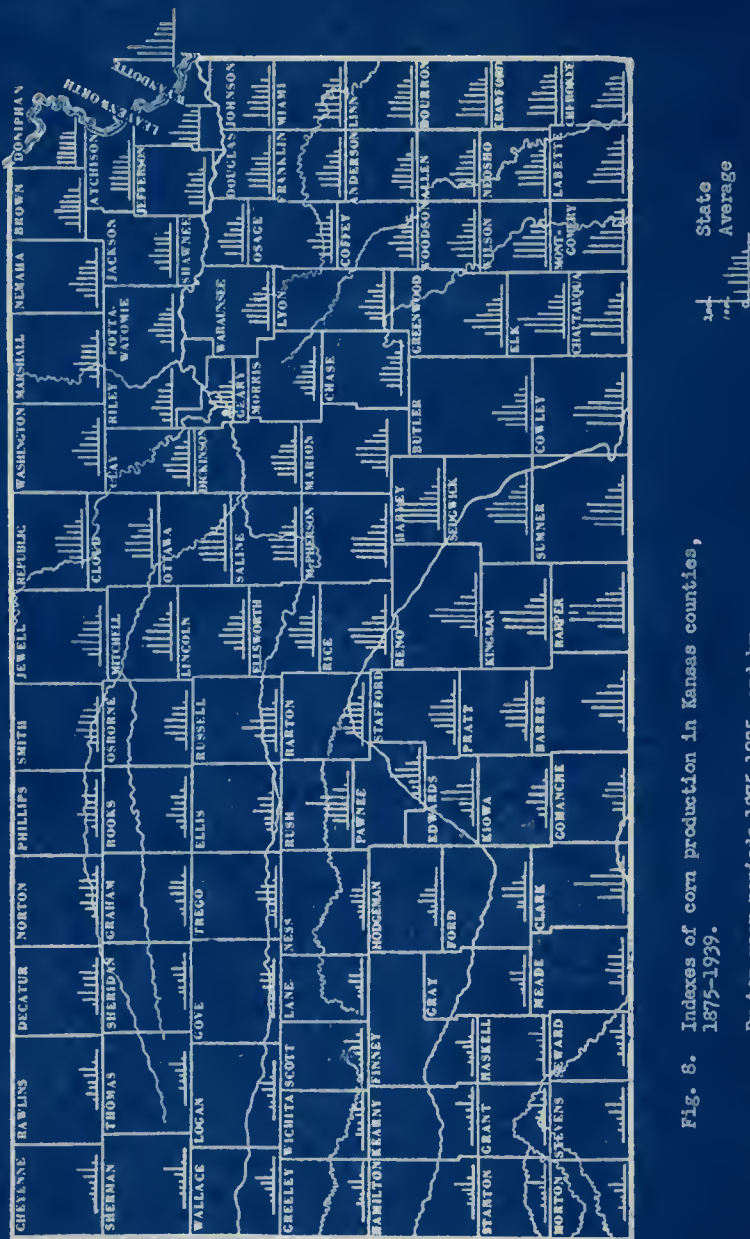
Closely associated with the numbers of hogs on farms in a given area, is the production of corn within that area. Corn has long been the basis of the swine industry, and under present methods of feeding, the hog has become nothing more than a form of condensed corn. Because of this situation, hog production necessarily fluctuates closely with changes in the production of corn.

There are three factors which determine whether or not corn will be fed to hogs: its availability, its price, and the price of hogs. The last two of these factors, when expressed in relation to one another, go to make up the corn-hog ratio.

The question of availability of corn for feeding is an important one to the Kansas farmer. Corn being a bulky article, the cost of transportation is high in relation to its value. Therefore, if corn is not available on the farm, or from sources near-by, the farmer who attempts to ship in corn to feed to his hogs, is placing himself at a decided disadvantage.

Thus, the factor apparently responsible for the decline in hog numbers in Kansas is the lack of an available feed supply in the form of corn.

Although the principal decrease in corn production in Kansas has occurred since 1935, the trend in production had been downward for some time prior to 1935. Figure 8, based on data obtained from the files in the Department of Economics and Sociology, Kansas State College, shows that in the eastern third of the state, the decline set in about 1900. In this section, the decrease was most marked in the southern part of the state whereas the northeastern counties nearly held their own in the production of corn.



In the central part of the state, this decline came about 10 years later, while in the western third of the state, the production of corn was still increasing until the drought in 1934 and 1935.

The weight to which hogs are commonly fed varies but little over the state. The results of a questionnaire sent out in connection with this project showed a variation in the average weight of slaughter hogs of fifty pounds, 180 pounds being the lightest average weight reported and 230 pounds the heaviest weight for butcher hogs. There seemed to be no significant relationship between the weight to which the hogs were fed and the feed supply in a given area. From these reports it appears that where the feed supply is limited, the hog feeder has elected to feed fewer hogs rather than to feed more and dispose of them at lighter weights.

As with cattle, the percentage of hogs within a county which are sold for slaughter does not indicate the importance of that county as a producer of butcher hogs. It does indicate the proportion of all hogs produced which go for slaughter and indirectly indicates the importance of the county as a producer of feeder pigs.

Figure 9 shows the percentage of hogs produced or fed in Kansas which were sold for slaughter in 1939.¹ Two distinct areas appear in which more than 90 percent of all hogs sold in 1939 were sold for slaughter. The first of these areas lies along the eastern border of the state, extending south to about the center of the state. In this section, Doniphan County, in the northeast corner of the state, was the only county selling more than 95 percent of its hogs for slaughter.

The second area includes eleven counties in the east central part of the state, running through the central part of the Flint Hills region and extending west to Rice and Ellsworth counties.

¹Ibid.

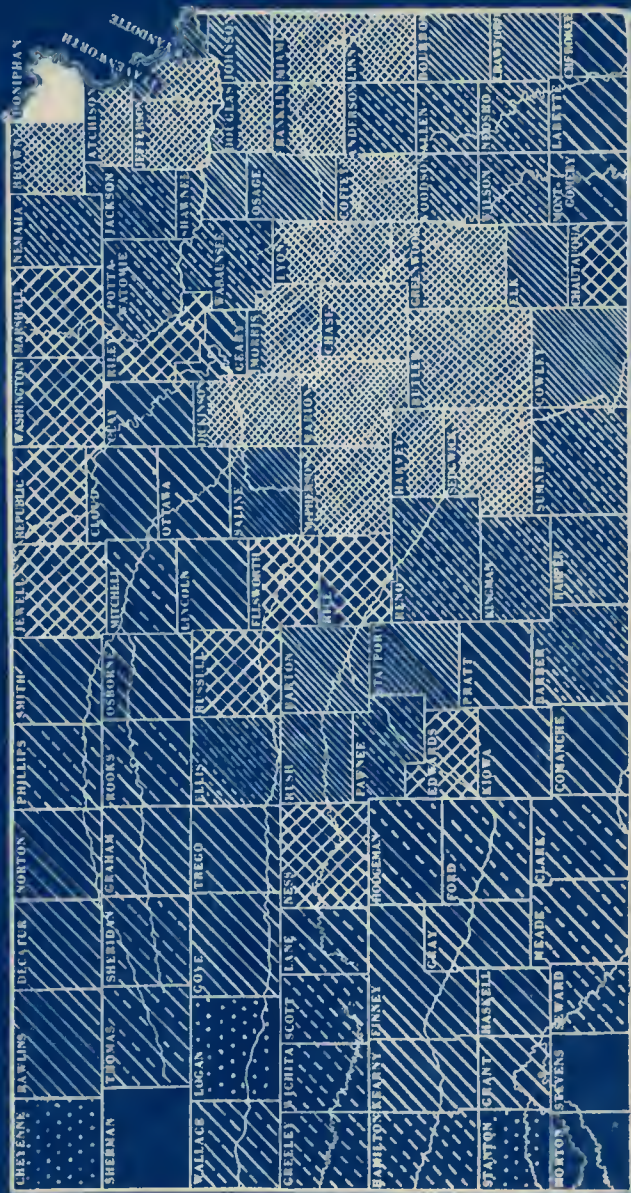
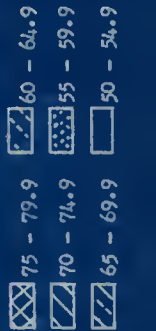


Fig. 9. Hogs produced or fed in Kansas and sold in 1939.

Percentage sold for slaughter in 1939, by counties.



Rush, Barton, and Stafford Counties were unusual in that more than 85 percent of their hogs were sold for slaughter, a condition scarcely to be expected so far west in the state.

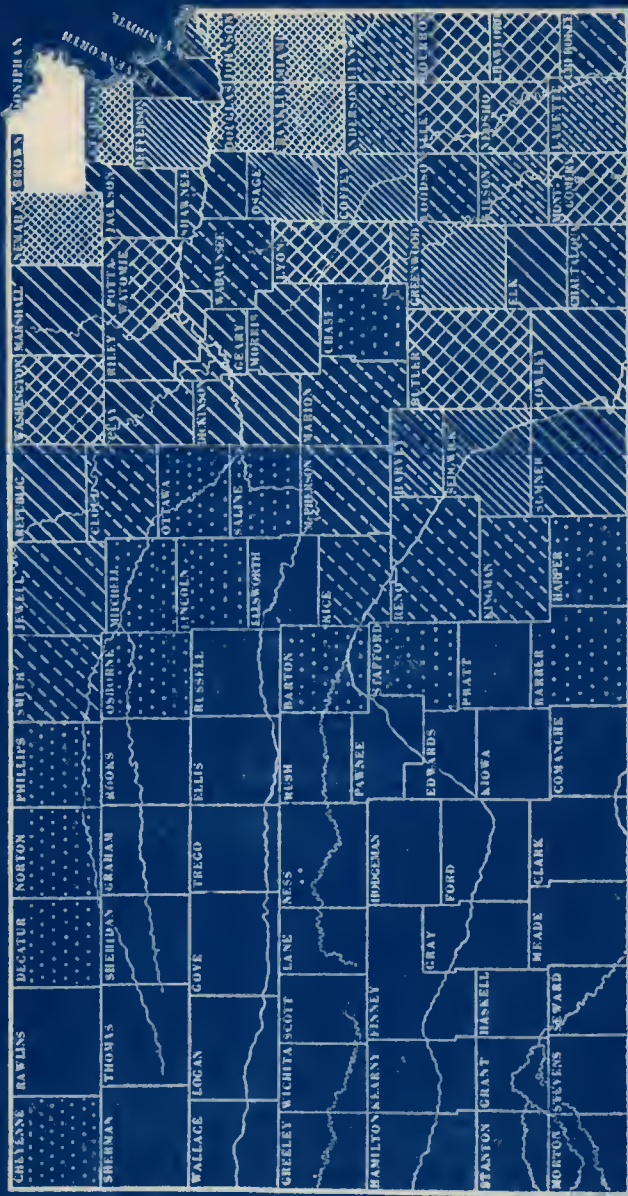
Figure 10 shows that the poundage of hogs available for slaughter on March 1, 1939 was greatest in the northeast corner of the state, with an area of secondary importance located in the southeast quarter.

Brown and Doniphan Counties had the greatest poundage of hogs available for slaughter on March 1, 1939, having respectively 5,100 and 7,800 pounds of available slaughter hogs per square mile. Other counties having a large quantity of available hog slaughter per square mile were Nemaha with 4,900 pounds, Douglas with 4,400 pounds, Miami with 4,300 pounds, Franklin with 4,200 pounds, and Atchison and Johnson with 4,100 pounds each.

In the south-central part of the state, Sedgwick County stood out above all the surrounding counties, having 3,800 pounds of hogs available for slaughter per square mile on March 1, 1939.

All of Kansas, west of Jewell County on the north and Kingman and Harper Counties on the south, excepting Smith County, had less than 1,000 pounds of hogs available for slaughter per square mile on March 1, 1939. Smith County, the single exception, had 1,100 pounds.

Hog numbers increased more rapidly than cattle numbers in the earlier years of the state. Figure 11 shows that hog numbers reached a peak in 1885 approximately typical of the peaks of those cycles which have followed since. On January 1, 1885, there were 3,000,000 hogs on farms in Kansas. That number has been exceeded but three times since then. The low points of cycles since that time have ranged between 1,700,000 and 2,400,000 head—until 1938. The decline during the past decade is unprecedented in Kansas hog production. In 1933, there were approximately 3,200,000 hogs in Kansas. By



Pounds per square mile



Fig. 10. Pounds of hogs per square mile in

Kansas counties January 1, sold for slaughter

in 1929.

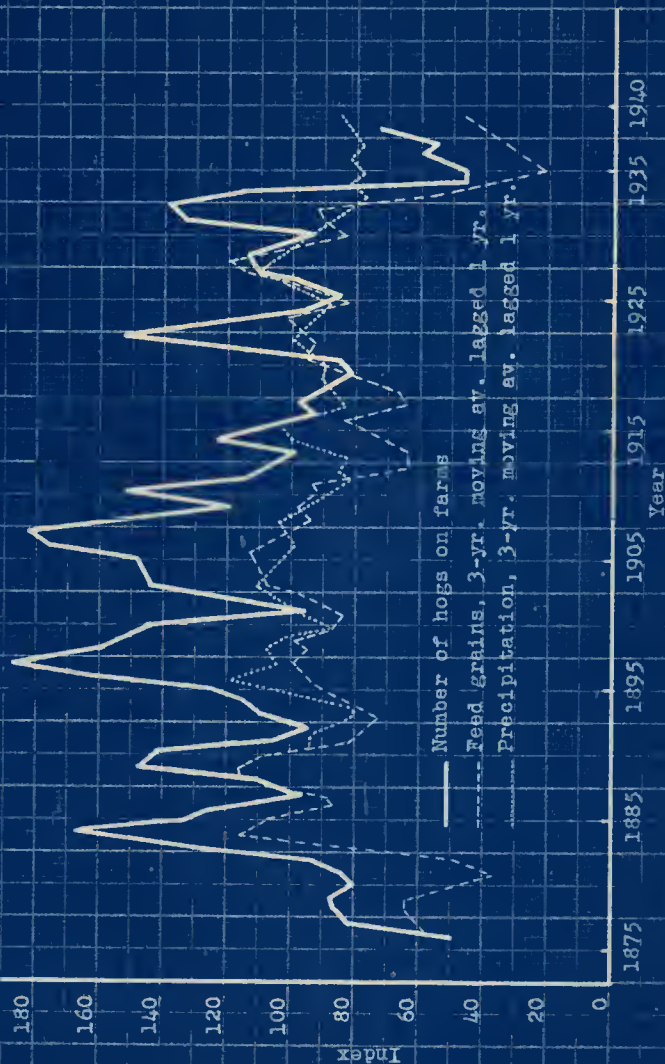


FIG. 11 Indexes of number of hogs on farms January 1, feed grain production, and annual precipitation in Kansas, 1876-1939.

1925-1929 Bases Used

| Item | Actual Base |
|------------------------------|-----------------|
| Number of hogs on farms | 1,483,000 head |
| Feed grains | 4,663,000 tons* |
| Average annual precipitation | 28.73 inches |

Base equals average of years 1925-1929. *Corn equivalent tons.

1938, this number had been reduced 75 percent, the state having about 800,000 hogs, by far the lowest figure since 1876.

The production of feed largely explains this decline. Throughout the period considered, hog numbers have followed feed production rather closely with a slight lag in hog numbers as would be expected. Since 1932, feed production, as already mentioned, dropped to the lowest levels in 60 years; hog production followed. Recovery from this low in hog numbers depends to quite an extent on feed production.

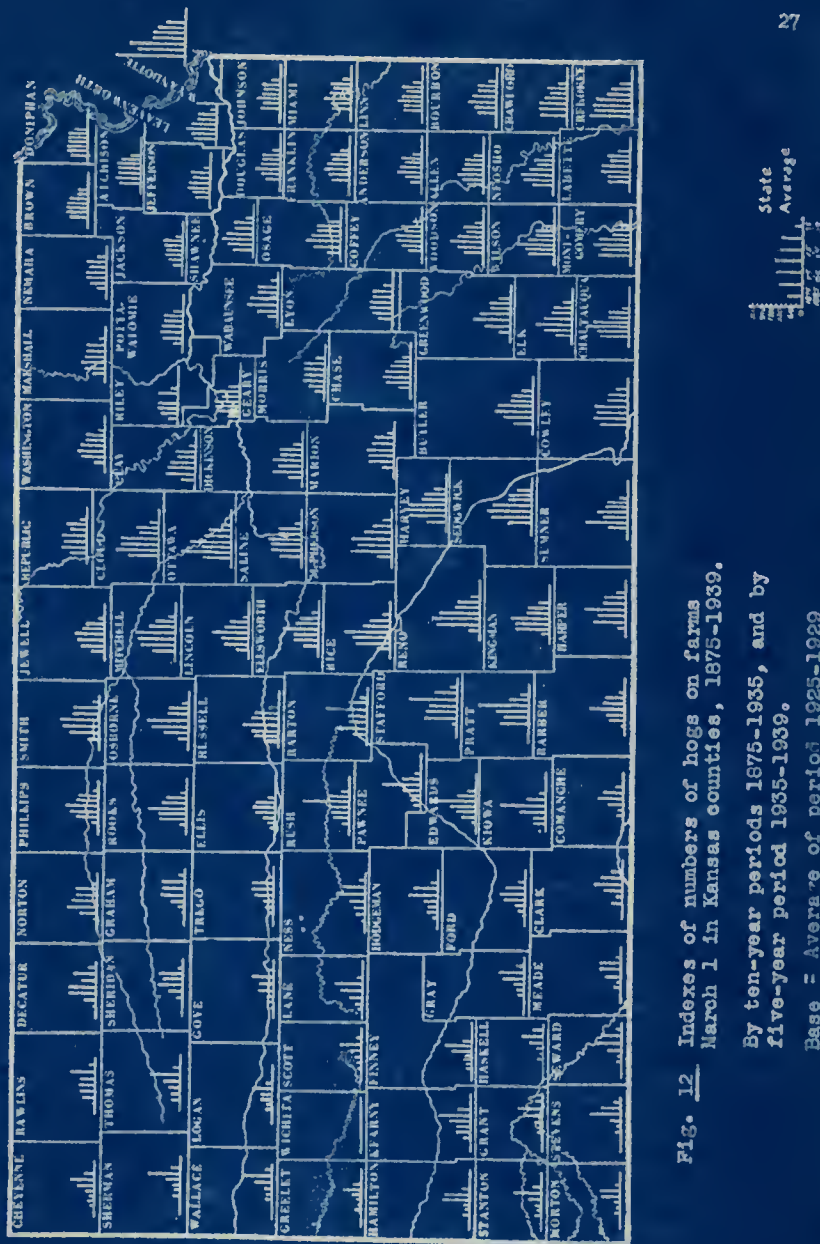
The relative importance of hog production in the different sections of the state since 1875 as shown in Figure 12 presents a different picture in each decade.

In the period 1875-1885, hog production was relatively unimportant in the western half of the state. In the extreme eastern section of the state, hog production was already well underway; in fact, two counties, Wyandotte and Cherokee, had more hogs in that decade than during any 10-year period since. However, it was during the period 1895 to 1905 that most of the counties in the eastern half of the state reached their peaks in hog numbers.

In the west-central part of Kansas, most counties attained their peak in hog numbers either during the period 1905-1915 or from 1915-1925. In the northern part of this section the peak came in the earlier decade, while in the southern part the peak tended generally to come in the later period.

In the far western quarter of the state the peak in hog numbers came during the period 1925-1935.

In general, hog numbers have been relatively stable throughout the eastern third of the state. This has been especially true for those counties in the northeastern corner of Kansas. With the exception of Wyandotte County, there has been little fluctuation in hog numbers in this area during this 65-year period.



It is through the central section of the state that the greatest variation in hog numbers has occurred. Hog numbers were small in the earliest period, increased rapidly until about 1925, declined somewhat by 1935, and have dropped off sharply since then.

In the western third of the state hog numbers have fluctuated noticeably, but hog production never attained sufficient importance to permit a range as great as in the central part of the state.

The charts in Figs. 8 and 12 do not present the relative importance of any particular county in comparison with any other, but do indicate the changes which have come about in hog and corn production within each county. Each bar represents the percent that production during that 10-year period was of the 1925-1929 average production.

Figure 8, showing corn production, is similar to Fig. 12, hog production. Charts for the individual counties on both maps indicate the close correlation which exists. This is to be expected, as already has been indicated; hog production follows corn production closely.

During the past year a considerable increase occurred in the numbers of sheep in Kansas (Fig. 13). Whereas the number of stock sheep on farms January 1, 1940, was only 400,000, by January 1, 1941, this number had increased to 514,000. Thus, sheep production assumed a much more significant position in the Kansas livestock industry than it had since 1890.

Figure 13 shows the tremendous boom in sheep production in Kansas that took place during the eighties. Sheep numbers jumped from about 200,000 in 1875 to nearly 1,300,000 in 1884. The decline which followed was nearly as rapid as the rise; numbers of stock sheep dropped to 300,000 in 1894. From then until 1941, the number of stock sheep remained fairly steady, fluctuating between 200,000 and 400,000. In 1941, for the first time since 1890, the

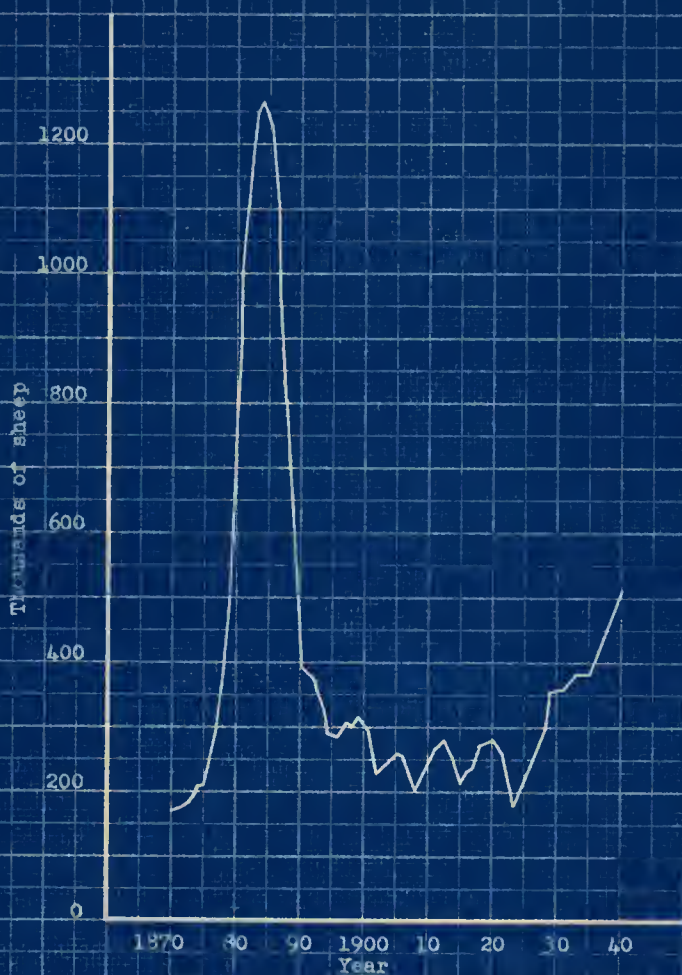


Fig. 13 Number of stock sheep on farms in Kansas on January 1, 1870-1940. 41, 12

number was substantially more than 400,000.

Numbers of sheep on farms in Kansas, the North-Central States, and for the United States as a whole have moved in the same direction all through the period since 1920 (Table 2). In all three of these areas, the trend in sheep numbers was downward from 1920 to 1923. Then beginning in 1924, sheep numbers increased gradually until 1935. From 1935 through 1937, sheep numbers in Kansas and the North-Central States declined slightly, but since 1937 the trend has been definitely upward. For the United States as a whole, the decline in sheep numbers carried on through 1938, recovery having taken place since that date.

Table 2. Index of stock sheep and lambs on farms, January 1, 1920-1940./11.12

Base equals average for period 1925-1929

| Year | Index | | |
|------|------------|----------------------|---------------|
| | Kansas | North-Central States | United States |
| 1920 | 102.3 | 104.4 | 97.0 |
| 1921 | 98.3 | 94.6 | 92.1 |
| 1922 | 87.6 | 84.9 | 86.7 |
| 1923 | 63.2-low | 83.5-low | 84.7-low |
| 1924 | 67.8 | 83.6 | 85.4 |
| 1925 | 79.0 | 88.1 | 89.6 |
| 1926 | 88.3 | 92.2 | 92.8 |
| 1927 | 96.6 | 98.9 | 98.9 |
| 1928 | 109.8 | 105.8 | 105.7 |
| 1929 | 126.3 | 115.1 | 115.0 |
| 1930 | 128.9 | 124.1 | 118.4 |
| 1931 | 128.9 | 131.1 | 124.0 |
| 1932 | 132.8 | 136.6 | 124.1 |
| 1933 | 136.8 | 136.5 | 123.0 |
| 1934 | 139.6 | 140.8 | 125.9 |
| 1935 | 138.2 | 140.1 | 121.2 |
| 1936 | 132.8 | 144.1 | 120.5 |
| 1937 | 123.5 | 139.3 | 122.0 |
| 1938 | 127.1 | 139.9 | 121.3 |
| 1939 | 143.6 | 142.0 | 124.0 |
| 1940 | 157.9-high | 148.2-high | 126.0-high |

In Kansas, the 1925-1929 base index of sheep numbers on farms January 1, fell off rapidly from 1920 to 1923, declining from 102 in 1920 to 63 in 1923, a loss of 39 points. During the same period, the index for the North-Central States declined from 104 to 84, a loss of 20 points; and for the United States as a whole, the index declined from 97 to 85, a loss of only 12 points. Thus, the loss in Kansas during the years 1920 to 1923 was much more severe than the loss in the United States or in the North-Central States.

Beginning in 1924, sheep numbers began to increase, Kansas moving from the low of 63 to a high of 140 in 1934, a gain of 77 points. In this same period, the North-Central States increased their sheep production from a low of 84 in 1923 to an index of 141 in 1934, a gain of 57 points. For the United States as a whole, the index of sheep numbers during this period increased from 85 to 126, a gain of 41 points. During the period 1923-1934, Kansas had recovered entirely from the loss in sheep numbers suffered prior to 1923.

From 1934 to 1937, numbers of sheep in Kansas declined, the index falling to 124 in 1937, a loss of 16 points from the 1934 level. During the two years 1938 and 1939, the index of sheep numbers in Kansas increased 34 points, and stood at 158 on January 1, 1940.

In the North-Central States, the index of sheep numbers remained relatively stable from 1934 to 1939, increasing to 148, a gain of seven points over the 1934 level.

For the United States as a whole, sheep numbers have remained even more stable since 1934. The index on January 1, 1940, was the same as in 1934, and the range in the index for these years was only five points.

For the United States as a whole, during 1940, the number of stock sheep on farms and ranches increased about two percent, and the January 1, 1941,

figure of 47,656,000 head of stock sheep and 6,224,000 sheep and lambs on feed, a total of 55,880,000 head, established a new high record for all time. Most of the increase in stock sheep was in the west North-Central States, of which Kansas is one, and in Texas, with the numbers in the 11 western states practically unchanged.

In Kansas the number of sheep and lambs on farms January 1, 1941, was 132 percent of the 1940 figure. This was the largest percentage increase in numbers in the entire United States. On January 1, 1941, there were 914,000 sheep and lambs on farms in Kansas.

This increase was mostly in lambs on feed, stock sheep being but 107 percent of the 1940 figure. Sheep and lambs on feed increased from a total of 210,000 in 1940 to 400,000 on January 1, 1941, showing an increase of 90 percent over the previous year.

On January 1, 1941, Kansas ranked twentieth in total sheep numbers in the United States; Kansas ranked twenty-third in numbers of stock sheep, but fourth in numbers of sheep and lambs on feed.

Figure 14 does not represent the relative importance of any particular county in sheep numbers when compared with any other, but does indicate the changes which have occurred in sheep production within each county in the state since 1875, according to data in the files of the Department of Economics and Sociology, Kansas State College. Each bar in the county charts represents the percent that sheep production in the county during that 10-year period was of the 1925-1929 average production for the county under consideration.

There has been a much greater fluctuation in sheep numbers in Kansas counties than there has for other types of livestock. Typical of most counties in the state was the tremendous increase in sheep numbers during the 1880's. In most counties sheep numbers dropped off rapidly during the

1890's although in many counties, especially in the western part of the state, this decrease was postponed about 10 years.

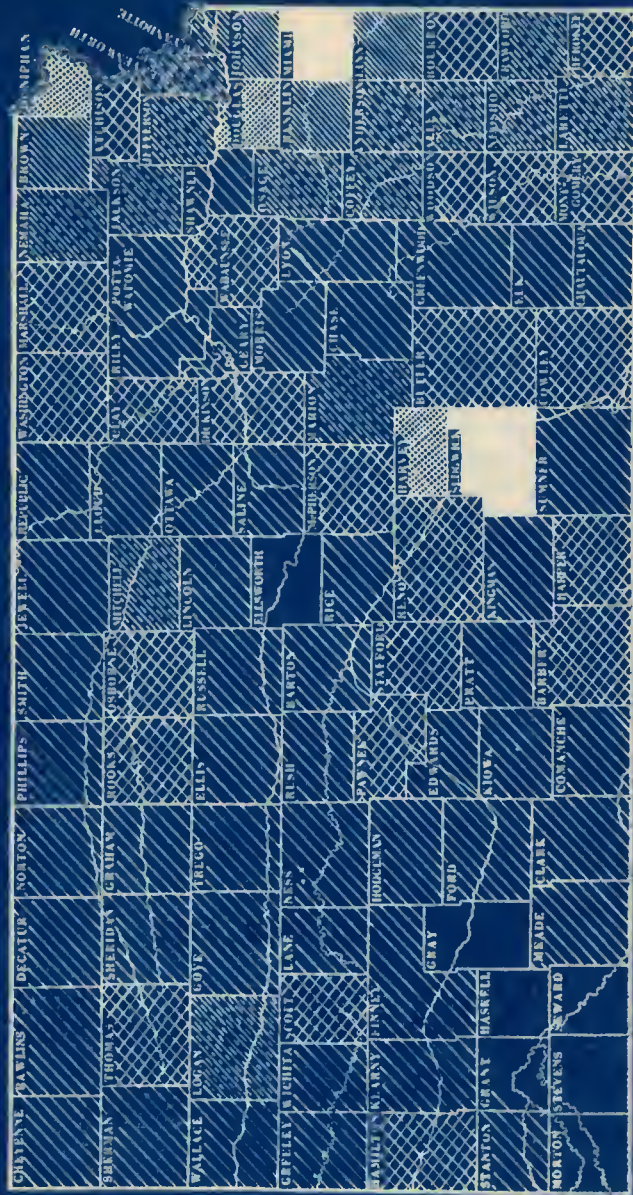
The low in numbers of sheep on farms tended to come most generally about the beginning of the present century. Since this low, numbers have been tending to increase in most counties. These are general tendencies, but in some cases individual counties have deviated from this general trend.

In contrast to cattle and hogs, sheep numbers in most counties of Kansas have definitely been increasing during the last five years (Figs. 15 and 16). The average numbers of sheep per square mile in 31 Kansas counties for the period 1935-1939, compared to the average number per square mile in the 10 years just preceding 1935, increased by at least three head per square mile. The average increase for these counties was 3.3 head per square mile. In only 12 counties had the sheep population decreased by three or more head per square mile; the average decrease for all 12 counties was 3.5 head per square mile.

Of the 31 counties in which the density of sheep numbers was increasing, 24 increased their sheep population by approximately three head per square mile, six by six head, and one by nine head per square mile.

Of those 12 counties in which the number of sheep per square mile decreased, 10 lost an average of three head per square mile; and two counties, Ponca and Wyandotte, lost an average of six head per square mile during this five-year period.

The area of greatest increase in sheep numbers is to be found in the south-central part of the state, and includes the following counties: Stafford, Reno, Harvey, Pratt, Kingman, Barber, Harper, Sumner, Cowley, and Elk. The average increase in density of sheep numbers in this area during the 1935-1939 period, was 4.8 head per square mile. Pratt, Barber, Kingman, and Harper Counties had an average increase of six head per square mile, while Sumner



Legend



Fig. 15 All sheep, number per square mile, Mar. 1.
(average of years, 1925-1934).

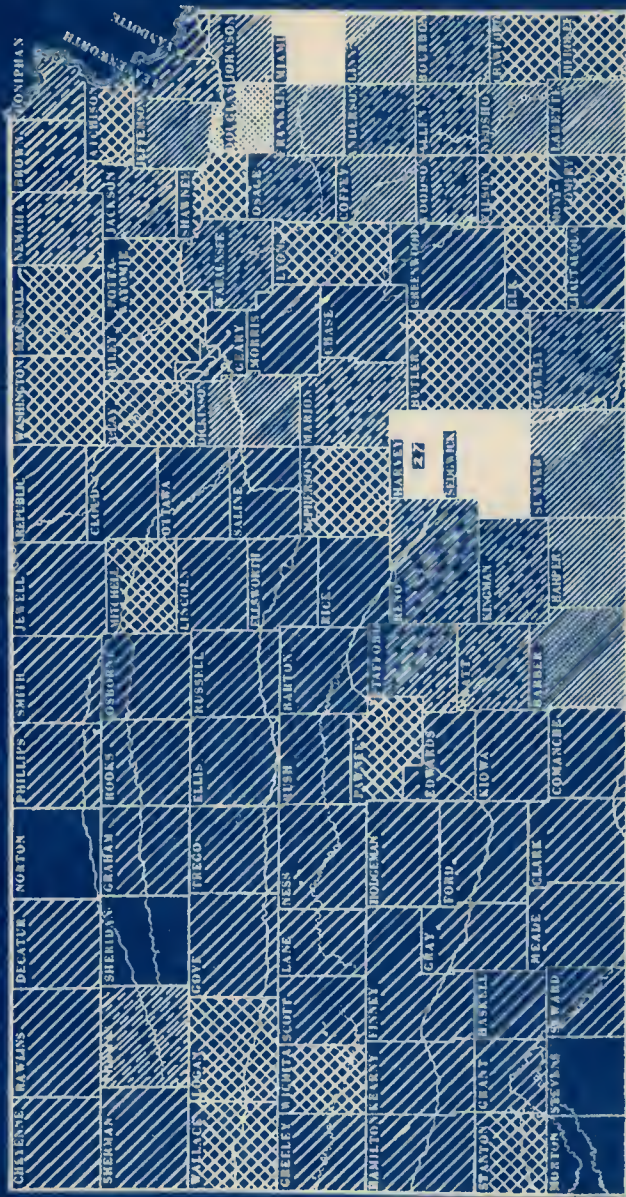


Fig. 16 All sheep, number per square mile, Mar. 1. (average of years, 1935-1939).

10 - 12.9

County increased its sheep population by nine head per square mile.

Another area where sheep numbers increased during this period began in Labette County and followed the Neosho River up through Neosho, Woodson, Coffey, and Lyon Counties, and then extended north into Lawrence, Riley, Pottawatomie, Shawnee, and Jefferson Counties.

In the extreme western part of the state were two other areas in which sheep numbers were increasing during the years 1935-1939. The first of these includes Thomas, Wallace, and Wichita Counties. These counties gained about three head per square mile in this five-year period. The second of these western areas is located in the southwestern part of the state and includes Stanton, Grant, Seward, Haskell, and Gray Counties.

In addition to these larger areas, there were two other counties which gained more than three head of sheep per square mile during this period. Dickinson County increased its sheep population by six head per square mile, and Ellsworth County by slightly more than three head.

There were three general areas in which the numbers of sheep declined. In the northeast corner of the state was the area where the greatest decline in sheep numbers took place. The three counties, Brown, Doniphan, and Wyandotte lost an average of five head per square mile during the period from 1935-1939.

The largest area of declining sheep numbers was found in the northern two tiers of counties just west of the center of the state. Included in this area were Mitchell, Osborne, Rooks, Norton, and Sheridan Counties. This area lost an average of three sheep per square mile during the 1935-1939 period.

In the far west, Logan, Scott, and Hamilton Counties also suffered a decline in sheep numbers. Crawford County was the only other county in which the density of sheep numbers declined.

Trends in Livestock Supplies in Kansas, the Corn Belt,
and States Adjacent to Kansas

Estimates of livestock shipped off farms to markets and direct to packers serve as indication of the flow of livestock from any one state or region. However, packers are not so much interested in knowing the total movement of livestock from a state, as they are in knowing the proportion of the flow that is available for slaughter. Unfortunately, the available estimates do not make this distinction. In spite of this fact, outshipment figures may be taken as a relatively accurate index of supplies available for slaughter for hogs, sheep, and lambs in Kansas and the surrounding areas. Also, these figures will show the potential supplies of slaughter cattle in each state if adequate quantities of feed were available for finishing purposes. Other studies have provided an estimate of the proportion of total cattle going for slaughter, and by applying this estimate to the total outshipment of cattle from Kansas, some idea of the volume available for slaughter may be obtained.

The importance of Kansas as a source of cattle shipped to markets and packers has been declining when compared with adjacent states and the Corn Belt as a whole over the period since 1924.

Table 3 indicates the position of Kansas in regard to outshipments of cattle in 1940 in comparison with adjacent states and the Corn Belt.

Table 3. Shipments of cattle from farms in Kansas and adjacent states, and from the Corn Belt, 1940. 4,5,6,7

| State | Outshipments 1940 | | Outshipments av. 1925-1929 |
|-----------|-------------------|------------------------------|----------------------------|
| | Thousand head | Percent of 1925-1929 average | Thousand head |
| Kansas | 1020 | 66.1 | 1544 |
| Nebraska | 1068 | 79.1 | 1350 |
| Missouri | 884 | 96.2 | 918 |
| Oklahoma | 689 | 109.8 | 627 |
| Colorado | 538 | 94.2 | 571 |
| Corn Belt | 9453 | 103.0 | 9175 |

The peak in outshipments of cattle from Kansas farms was reached in 1925, 1,812,000 head being shipped that year. Then outshipments started downward, sharply until 1928, then gradually continuing downward to a low of 1,175,000 in 1933. With the liquidation of the cattle population of Kansas in 1934 because of the drought, outshipments rose sharply, reaching 1,575,000 that year. Since 1934 there has been a sharp reduction of outshipments of cattle from Kansas farms, the low coming in 1938 when only 967,000 were shipped, and the figure for 1940 standing at 1,020,000 head, 66.1 percent of the 1925-1929 average.

It can be seen from this table and from Fig. 17 that Kansas has suffered a heavier decrease in outshipments, in comparison with the 1925-1929 average, than any one of its adjacent states or the Corn Belt.

In general, the trend in outshipments from Kansas, from adjacent states, and from the Corn Belt tended to follow a similar trend until about 1934. Since that time there has been a wider variation in outshipments of cattle from the different areas.

Oklahoma stood out as the state having the greatest change in its outshipments of cattle since 1934. From 564,000 head in 1934, Oklahoma increased its outshipments to 1,010,000 head in 1935, a gain of 72 percent. Since 1935 outshipments of cattle from Oklahoma have declined, and 689,000 head were shipped in 1940. However, this was still relatively high, being 109.8 percent of the 1925-1929 average. This indicates the increasing importance of Oklahoma as a producer of cattle. The trend in outshipments of cattle from Kansas has not differed so sharply from trends in the other three adjacent states and the Corn Belt. However, it is significant to note from Table 3 that outshipments of cattle in every adjacent state and in the Corn Belt were nearer their 1925-1929 average than Kansas; Nebraska, the next lowest state was 13 percent higher

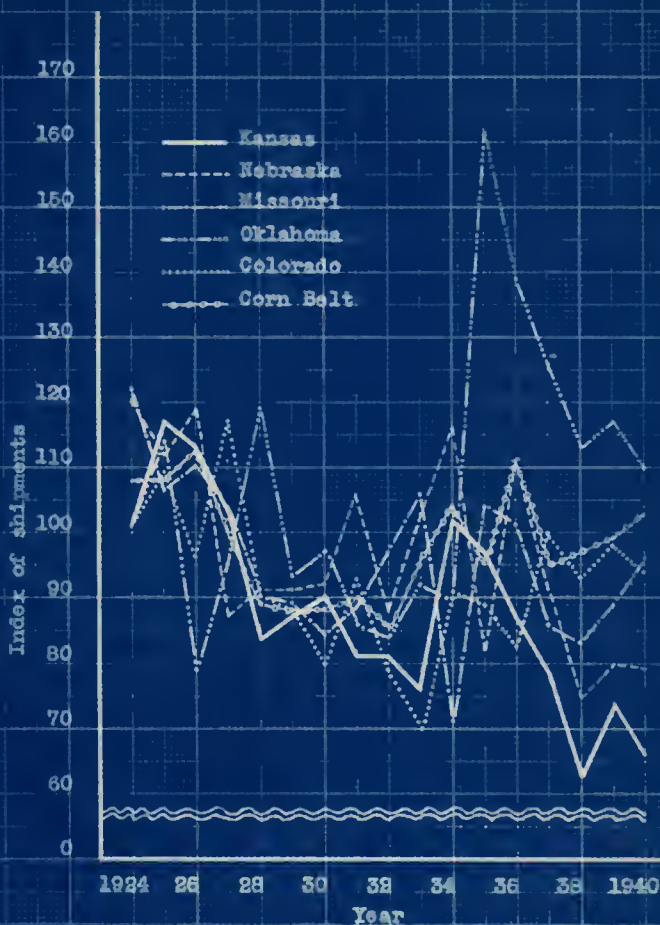


Fig. 11 Cattle shipped to markets and packers from farms in Kansas and adjacent states, and from the Corn Belt, 1924-1940. 4,5,6,7

* Base = average of the period 1925-1929.

| State | No. cattle av. of base pd. * (000) | % of Nat'l. total in base pd. |
|-----------|---|-------------------------------------|
| Kansas | 1544 | 9.8% |
| Nebraska | 1380 | 8.6% |
| Missouri | 918 | 5.8% |
| Oklahoma | 627 | 3.9% |
| Colorado | 571 | 3.6% |
| Corn Belt | 9175 | 58.5% |

than Kansas.

In summarizing the trends in outshipments of cattle from farms in Kansas, adjacent states, and the Corn Belt, it may be said that in all of these areas the trend in shipments was fairly uniform until 1934, but since that time, outshipments of cattle from farms in Kansas have declined at a more rapid rate than in any of the other areas. Oklahoma and the Corn Belt shipped more cattle off farms in 1940 than they did as an average for the period 1925-1929.

Outshipments of hogs from farms in Kansas and adjacent states and the Corn Belt have shown a more definite movement common to all states than in the case of cattle.

Beginning in 1924, there began a definite downward movement which lasted through 1926 and 1927. In 1927 outshipments of hogs again started to increase rapidly, continuing in that direction until 1928 or 1929. Outshipments of hogs from Kansas, adjoining states, and the Corn Belt declined slightly during 1930 and 1931; regained their loss in 1932 and 1933; and then dropped rapidly through 1935. Some of this loss was regained in 1936 but shipments dropped to a new low in 1937 and 1938. Since that time the trend has again turned upward sharply.

Table 4 presents the position of Kansas in regard to outshipments of hogs in 1940 in comparison with adjacent states and the Corn Belt. This table, together with Fig. 18, shows that these six areas readily classify themselves into two groups: (1) those which have recovered their loss in outshipments of hogs brought on chiefly by the reduction in feed grain supplies caused by the drought, and (2) those that have not. In the former group were Missouri, the Corn Belt, and Oklahoma. In the latter group were Kansas, Colorado, and Nebraska.

Table 4. Shipments of hogs from farms in Kansas and adjacent states, and from the Corn Belt.²

| State | Outshipments 1940 | | Outshipments av. 1925-1929 |
|-----------|-------------------|-----------------------|----------------------------|
| | Thousand head | Percent of 1925-1929: | Thousand head |
| | | average | |
| Kansas | 1650 | 73.3 | 2250 |
| Nebraska | 2870 | 54.8 | 5241 |
| Missouri | 4380 | 105.2 | 4161 |
| Oklahoma | 793 | 128.7 | 616 |
| Colorado | 285 | 70.5 | 404 |
| Corn Belt | 49,483 | 109.2 | 45,296 |

²Calculated from data obtained from the Agricultural Marketing Service and from Annual Summary of Livestock, Meats, and Wool, 1940.

The high level of outshipments from Oklahoma in 1940 is significant in that it is probably an indication of the tendency of the South and the Southeast to produce and pack more of their own meat supply, thus reducing the extent of this important market for Kansas meats and packinghouse products.

Outshipments of sheep and lambs from these areas have tended to increase since 1924 with the exceptions of Colorado, which has remained about steady, and Nebraska, which has declined slightly (Table 5).

Table 5. Shipments of sheep and lambs from farms in Kansas and adjacent states, and from the Corn Belt.^{4,5,6,7}

| State | Outshipments 1940 | | Outshipments av. 1925-1929 |
|-----------|-------------------|-----------------------|----------------------------|
| | Thousand head | Percent of 1925-1929: | Thousand head |
| | | average | |
| Kansas | 697 | 117.5 | 593 |
| Nebraska | 1149 | 89.5 | 1284 |
| Missouri | 1211 | 136.0 | 890 |
| Oklahoma | 241 | 382.5 | 63 |
| Colorado | 2412 | 106.4 | 2266 |
| Corn Belt | 11,376 | 146.9 | 7744 |

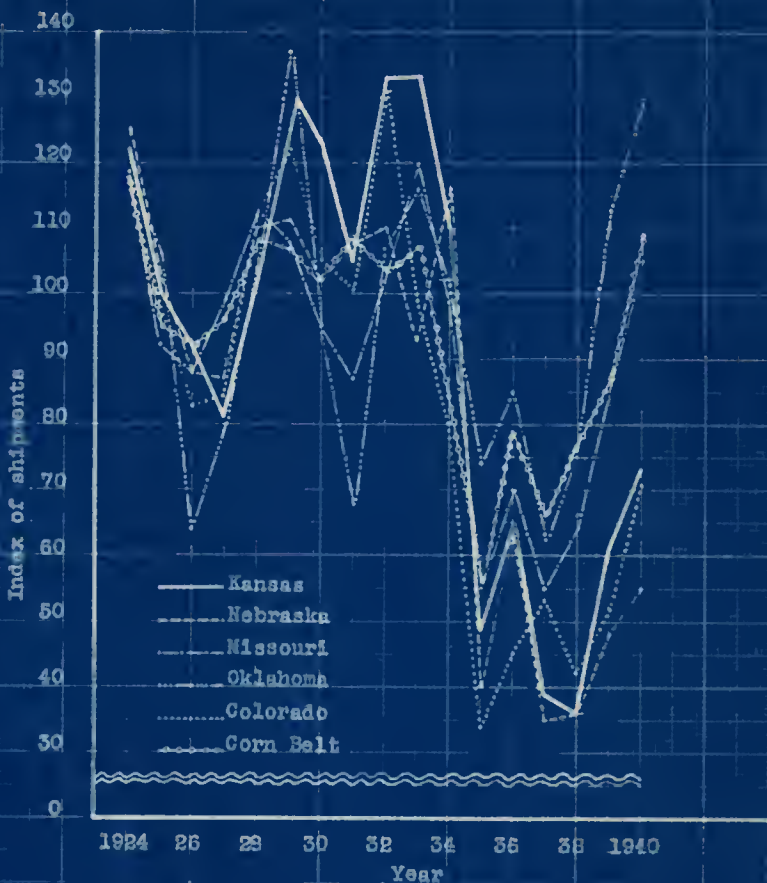


Fig. 18 Hogs shipped to markets and packers from farms in Kansas and adjacent states, and from the Corn Belt, 1924-1940. 4,5,6,7

* Base = average of period, 1925-1929.

| State | No. hogs av. of base pd.* (000) | % of Nat'l. total in base pd. |
|-----------|--|-------------------------------------|
| Kansas | 2250 | 4.5 |
| Nebraska | 5241 | 10.1 |
| Missouri | 4161 | 8.8 |
| Oklahoma | 616 | 1.1 |
| Colorado | 404 | 0.7 |
| Corn Belt | 45,298 | 88.0 |

Most of the increase in outshipments of sheep and lambs in Kansas has come since 1931, the peak coming in 1935 when 353 thousand head of sheep and lambs were shipped to markets and packers from farms in Kansas (Fig. 19). The heavy outshipments of sheep and lambs from Kansas farms in 1935, was due to excellent wheat pasture and the movement of large numbers of lambs into the state for grazing. In 1936, only 524,000 sheep and lambs left Kansas farms. Outshipments of sheep and lambs continued low through 1937, and then rose sharply through 1938 and 1939, 738,000 being moved in the latter year.

The Corn Belt as a whole has increased its outshipments of sheep and lambs rather steadily during the period since 1924, suffering less of a decline in outshipments during the drought years and having more than recovered its loss since 1937. In 1924, only 7,164,000 head of sheep and lambs were shipped to market off farms in the Corn Belt. By 1940, this outshipment figure had reached a total of 11,376,000 head, reflecting the increased emphasis being placed on sheep production throughout this area.

Oklahoma apparently has increased its outshipments of sheep and lambs tremendously during the years since 1924. The index of outshipments reached 444 in 1939 and stood at 383 in 1940. However, it also must be recognized that Oklahoma was still by far the least important sheep producer among the areas herein considered. As in the case of hogs, and to a lesser extent with cattle, this great increase in sheep numbers represented an indication of a trend toward a more diversified type of agriculture in the South, brought on principally by the loss of the export market for cotton, necessitating the replacement of a part of the cotton acreage with grain and forage crops.

The seasonal variation from month to month in the flow of livestock from Kansas farms is important to the packer both from the standpoint of the effect which it may have upon the price of the livestock in question, and from the

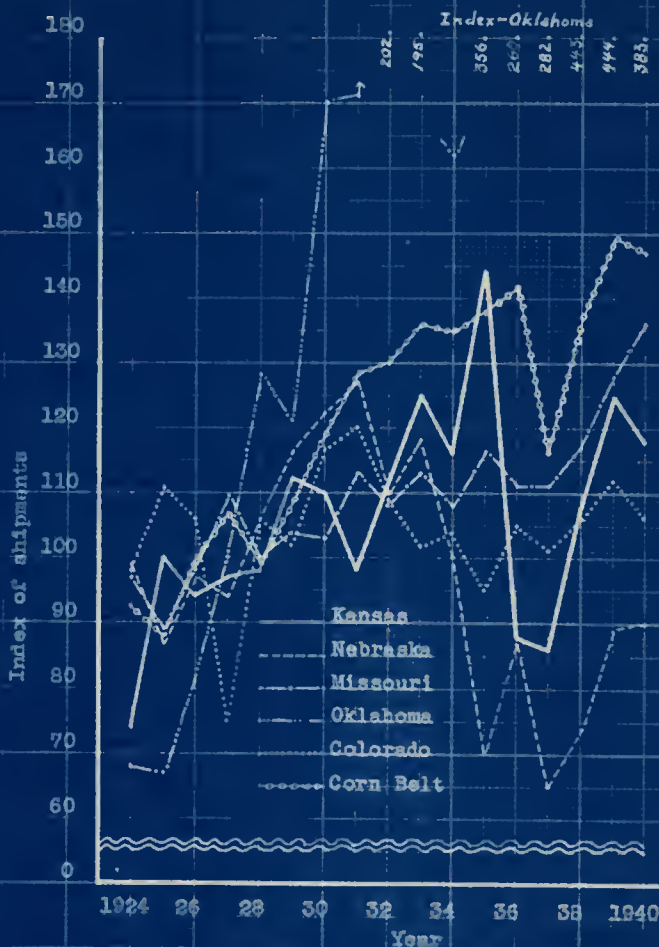


Fig. 12 Sheep and lambs shipped to markets and packers from farms in Kansas and adjacent states, and from the Corn Belt, 1924-1940. 4,5,6,7

* Base = average of period 1925-1929.

| State | No. sheep and lambs av. of base pd. (1925-1929) | % of Nat'l. total in base pd. |
|-----------|---|-------------------------------|
| Kansas | 583 | 2.6 |
| Nebraska | 1284 | 5.7 |
| Missouri | 890 | 3.9 |
| Oklahoma | 63 | 0.2 |
| Colorado | 2286 | 10.1 |
| Corn Belt | 7744 | 34.7 |

standpoint of his utilizing his equipment and labor force to their maximum capacity.

There is a definite seasonal variation in the outmovement of cattle from Kansas farms (Table 6 and Fig. 20). There is a range in seasonal variation of more than 100 percent during the year. As an average for the period 1920-1940, the fewest cattle moved off Kansas farms during the months of May and June, while the months of heaviest shipment were August, September, and October. This heavy fall movement of cattle represented the effect of the movement of grass cattle out of the Flint Hills and other pasture regions of Kansas, while the fed cattle movement was represented by the secondary peak occurring in January.

Table 6. Indexes of the average seasonal outmovement of Kansas livestock to all markets, 1920-1940./4,5,6,7

| Month | Index of outmovement for ³ | | |
|-----------|---------------------------------------|-------|-----------------|
| | Cattle | Hogs | Sheep and lambs |
| January | 104.7 | 127.8 | 169.5 |
| February | 79.0 | 108.6 | 113.2 |
| March | 77.2 | 91.2 | 100.2 |
| April | 81.6 | 103.5 | 98.2 |
| May | 67.0 | 120.0 | 103.0 |
| June | 55.5 | 111.6 | 109.2 |
| July | 79.6 | 74.7 | 69.4 |
| August | 145.5 | 80.4 | 67.8 |
| September | 159.7 | 84.3 | 55.8 |
| October | 153.4 | 96.0 | 57.6 |
| November | 99.4 | 94.2 | 81.0 |
| December | 83.9 | 105.6 | 123.5 |

³Yearly average movement equals 100.

While the seasonal outmovement of hogs or sheep and lambs was not as extreme as that of cattle, there was still a definite variation in this respect.

The seasonal movement of hogs off Kansas farms tends to have two definite

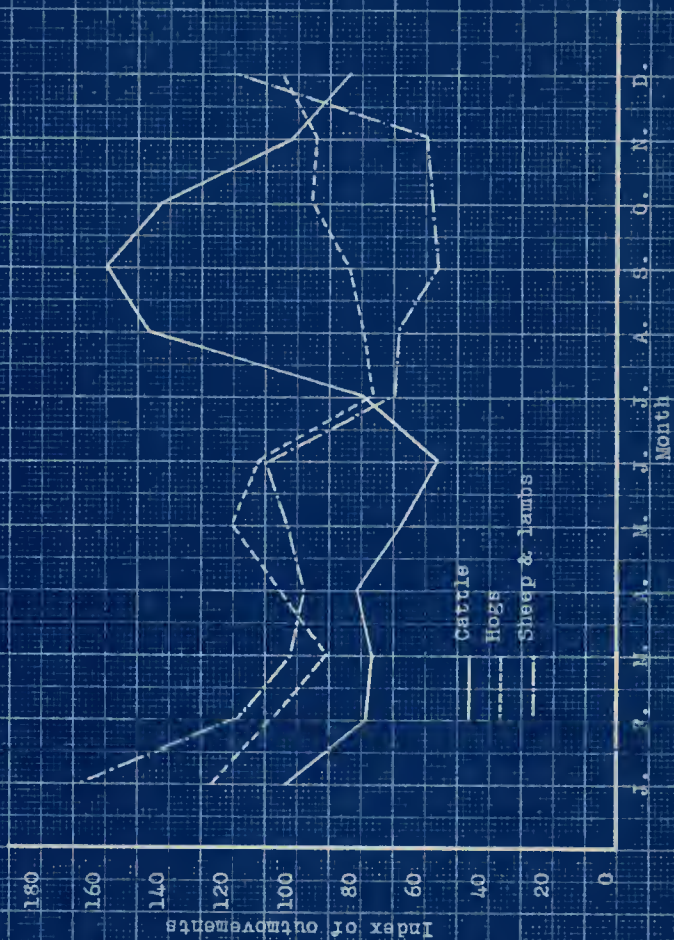


Fig. 20 Indexes of the average seasonal outmovement of Kansas livestock to all markets, 1920-1940. /4,5,6,7

Yearly average movement equals 100.

peaks due to the two-litter system used by the great majority of Kansas farmers. The fall pig crop of each previous year tended to start to market in April, reach a peak in May, continue in large numbers through June, and decline sharply in July. Marketings of the spring pig crop began to reach full swing in December, rise rapidly to a peak in January, and continue moderately strong through February. It is interesting to observe that the two peaks in the seasonal outmovement of hogs from Kansas tended to be approximately equal. In Kansas the fall pig crop tends to be more nearly equal to the spring pig crop than it does for the United States as a whole. As an average for the period 1924-1940, the fall pig crop in Kansas was 75.5 percent as large as the average of the spring pig crops for the same period, whereas for the United States as a whole, the fall pig crop was only about 55 percent as large as the spring pig crop.

Another situation in which there appeared two definite peaks in marketing occurred in the case of sheep and lambs. The peak, beginning in December and continuing through January and February, represented the period of heaviest marketings of lambs from Kansas wheat pastures. Marketing of these wheat pasture lambs continued through March and April. During May and June there was a secondary peak in the marketing of sheep and lambs off Kansas farms. This secondary peak represented the last of the wheat pasture lambs plus the heaviest run of new-crop spring lambs.

Receipts at Primary Markets in Kansas

During the last 25 years, some definite shifts in livestock receipts at Kansas City, Wichita, and St. Joseph, the three primary markets for Kansas livestock have occurred. In general, Kansas City has lost part of the volume which

it formerly had, St. Joseph has remained relatively steady, and Wichita has grown in importance as a market for Kansas livestock.

In conversations with packers, both large and small, on terminal markets, the problem most frequently mentioned by them was that of securing adequate volume because of the decrease in livestock receipts on the markets on which they were located. The trend in receipts at Kansas City, St. Joseph, and Wichita tends to bear out their statement.

Undoubtedly the decline in livestock numbers in Kansas in recent years was the primary cause of this decrease in receipts on the terminal markets. However, the growth of the livestock auction and other interior market outlets have all taken their share from the volume of livestock formerly shipped for sale on the terminal markets.

Beginning with the year 1915, receipts of cattle at the three markets, Kansas City, St. Joseph, and Wichita, have tended to move in the same general direction, as is shown in Fig. 21 and Table 7. However, the relative importance of these three markets has undergone a definite change during this period.

During the three years from 1915 to 1918, cattle receipts at all three of these markets increased sharply. From the peak reached in 1918, receipts fell off about as rapidly as they had increased, reaching a low in 1921. During the three years of increasing receipts, both St. Joseph and Wichita improved their position as cattle markets in comparison with Kansas City, and although they lost some of this advantage in the decline in receipts which followed the war-time high, they were still relatively more important than before the war.

After 1921, receipts again rose, this time reaching a peak for these three markets in 1923. From 1923 to 1933 the trend of receipts at the three markets was gradually downward, with both St. Joseph and Wichita improving

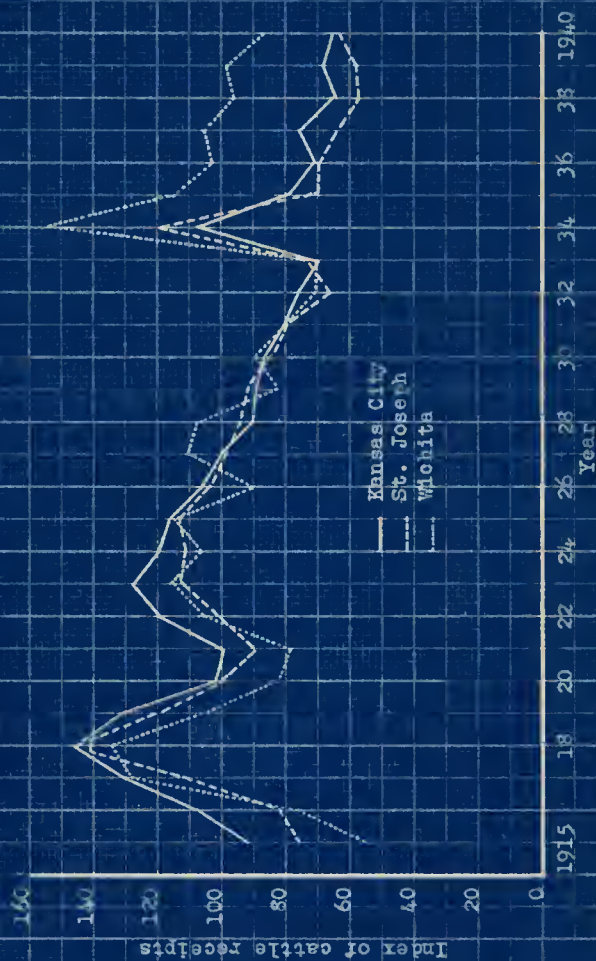


Fig. 21 Indexes of cattle receipts at Kansas City, St. Joseph, and Wichita stockyards, 1915-1940.

Average of period 1925-1929 equals 100.

Table 7. Indexes of cattle receipts at Kansas City, St. Joseph, and Wichita Stockyards, 1915-1940, inclusive.⁴

Average of period 1925-1929, inclusive, =100.

| Year | Indexes Kansas City | Indexes St. Joseph | Indexes Wichita |
|------|------------------------|-----------------------|--------------------|
| 1915 | 89.8 | 74.5 | 51.7 |
| 1916 | 105.1 | 61.1 | 74.5 |
| 1917 | 127.5 | 111.1 | 125.6 |
| 1918 | 144.5 | 145.7 | 133.3 |
| 1919 | 130.4 | 120.5 | 105.2 |
| 1920 | 101.7 | 101.1 | 82.0 |
| 1921 | 99.0 | 88.5 | 78.2 |
| 1922 | 118.0 | 99.8 | 105.2 |
| 1923 | 127.0 | 111.6 | 113.9 |
| 1924 | 119.3 | 110.6 | 105.0 |
| 1925 | 116.3 | 111.7 | 113.0 |
| 1926 | 105.4 | 103.2 | 88.7 |
| 1927 | 99.9 | 99.3 | 110.2 |
| 1928 | 89.7 | 93.8 | 106.9 |
| 1929 | 82.6 | 91.9 | 81.2 |
| 1930 | 87.0 | 84.3 | 90.2 |
| 1931 | 80.4 | 79.4 | 79.7 |
| 1932 | 75.8 | 66.1 | 70.1 |
| 1933 | 69.7 | 73.3 | 69.6 |
| 1934 | 108.9 | 119.4 | 153.0 |
| 1935 | 77.7 | 68.9 | 113.3 |
| 1936 | 69.3 | 70.2 | 102.3 |
| 1937 | 75.4 | 63.7 | 105.4 |
| 1938 | 64.4 | 56.9 | 96.2 |
| 1939 | 67.0 | 57.6 | 97.9 |
| 1940 | 63.9 | 62.4 | 87.3 |

⁴Calculated from data obtained from annual reports of the Kansas City, St. Joseph, and Wichita Stockyards.

their position as a cattle market relative to Kansas City. During the next year the index of market receipts at all three markets increased greatly. This relative increase at Wichita was much greater than at the other two markets, being 210 percent of the increase at Kansas City and 180 percent of the increase at St. Joseph. Receipts fell off rather sharply from 1934 to 1935, and since that time the trend has been gradually downward.

The percentage of the total receipts of these three markets which went to each market can be seen from Fig. 22 and Table 8. From Fig. 22 it can be seen that Wichita has been receiving a progressively larger share of the total receipts; St. Joseph has remained about the same; and Kansas City has declined somewhat in its proportionate share of the receipts. Wichita increased its share of the cattle receipts of these three markets from six percent in 1915 to 15 percent in 1939, and in 1940 received 13 percent of the total. During the same period, the percentage represented by receipts at Kansas City declined from 77 percent in 1915 to a low of 67 percent in 1934, and in 1940 Kansas City received 69 percent of the total cattle receipts at these three markets.

It is at the large, terminal markets that the decrease in hog numbers has been felt most keenly (Fig. 23 and Table 9). The index of hog receipts at Kansas City, based on the period 1925-1929 as 100, stood at 166 in 1923. Receipts then declined to 62 in 1932, a loss of 106 points; regained 34 points in 1933, but then again started to drop, falling to 17 in 1937 and 1938. Since then receipts have again been increasing, standing at 33 for 1940.

The index of receipts of hogs at St. Joseph followed Kansas City closely until 1934. Since then it has tended to hold its relative position above that of Kansas City. The low at St. Joseph came in 1937 when the index of hog receipts stood at 36. Since then St. Joseph has recovered rapidly, and in 1940 the index of receipts stood at 72.



Fig. 22. Distribution of cattle receipts at Kansas City, St. Joseph, and Wichita stockyards, 1915-1940. Percent going to each market. /

Table 8. Distribution of cattle receipts at Kansas City, St. Joseph, and Wichita Stockyards, percentage going to each market, 1915-1940, inclusive.⁴

| Year | Kansas City | St. Joseph | Wichita |
|------|-------------|------------|---------|
| 1915 | 76.9 | 16.8 | 6.3 |
| 1916 | 76.8 | 15.6 | 7.8 |
| 1917 | 73.0 | 16.7 | 10.3 |
| 1918 | 71.6 | 19.0 | 9.4 |
| 1919 | 73.7 | 17.8 | 8.5 |
| 1920 | 72.9 | 19.1 | 8.0 |
| 1921 | 73.7 | 17.3 | 9.0 |
| 1922 | 73.6 | 17.0 | 9.4 |
| 1923 | 73.6 | 17.0 | 9.4 |
| 1924 | 73.0 | 17.8 | 9.2 |
| 1925 | 71.9 | 18.1 | 10.0 |
| 1926 | 72.3 | 19.0 | 8.7 |
| 1927 | 70.0 | 19.0 | 11.0 |
| 1928 | 69.0 | 19.0 | 12.0 |
| 1929 | 71.0 | 19.0 | 10.0 |
| 1930 | 71.3 | 18.2 | 10.5 |
| 1931 | 71.4 | 18.5 | 10.1 |
| 1932 | 73.0 | 17.0 | 10.0 |
| 1933 | 70.5 | 19.5 | 10.0 |
| 1934 | 67.2 | 19.3 | 13.5 |
| 1935 | 69.4 | 16.2 | 14.4 |
| 1936 | 67.8 | 18.0 | 14.2 |
| 1937 | 70.4 | 15.6 | 14.0 |
| 1938 | 69.3 | 16.0 | 14.7 |
| 1939 | 69.7 | 15.8 | 14.5 |
| 1940 | 68.9 | 17.7 | 13.4 |

⁴ Ibid.

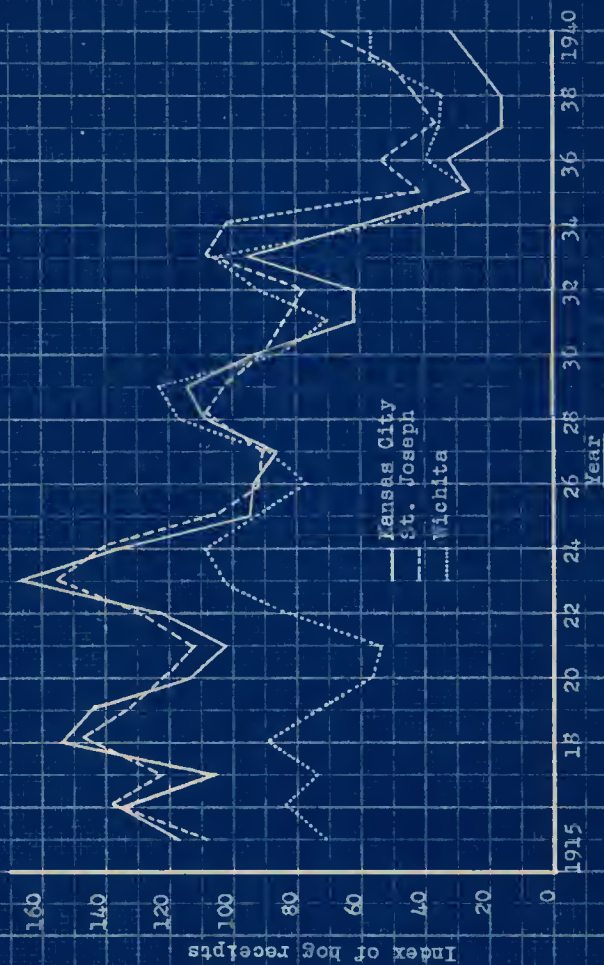


Fig. 23 Indexes of hog receipts at Kansas City, St. Joseph, and Wichita stockyards, 1915-1940.

Average of period 1925-1929 equals 100.

Table 9. Indexes of hog receipts at Kansas City, St. Joseph, and Wichita Stockyards, 1915-1940, inclusive.⁴

| Year | Kansas City Index | St. Joseph Index | Wichita Index |
|------|----------------------|---------------------|------------------|
| 1915 | 116.4 | 107.3 | 70.2 |
| 1916 | 137.0 | 139.0 | 84.4 |
| 1917 | 104.7 | 121.4 | 72.9 |
| 1918 | 153.0 | 148.6 | 91.1 |
| 1919 | 144.4 | 134.4 | 72.8 |
| 1920 | 113.4 | 121.0 | 56.4 |
| 1921 | 101.4 | 112.8 | 54.4 |
| 1922 | 122.1 | 130.3 | 83.8 |
| 1923 | 166.2 | 155.3 | 104.1 |
| 1924 | 134.9 | 141.2 | 108.1 |
| 1925 | 95.0 | 105.7 | 93.0 |
| 1926 | 83.6 | 92.4 | 77.2 |
| 1927 | 87.5 | 90.1 | 89.3 |
| 1928 | 109.9 | 109.0 | 117.7 |
| 1929 | 113.9 | 102.8 | 122.7 |
| 1930 | 92.6 | 91.4 | 83.0 |
| 1931 | 61.5 | 83.5 | 69.8 |
| 1932 | 62.4 | 78.1 | 94.6 |
| 1933 | 95.5 | 103.4 | 107.1 |
| 1934 | 58.0 | 100.8 | 53.2 |
| 1935 | 26.6 | 41.9 | 27.2 |
| 1936 | 33.9 | 50.9 | 40.2 |
| 1937 | 17.1 | 36.0 | 34.8 |
| 1938 | 17.3 | 42.7 | 33.9 |
| 1939 | 23.9 | 52.0 | 57.3 |
| 1940 | 33.1 | 71.5 | 56.8 |

⁴ Ibid.

Receipts at Wichita were increasing all through the period 1915-1929, reaching a high of 122 in 1929. It was during the period from 1923 through 1927 that Wichita improved its position as a hog market in relation to the markets at Kansas City and St. Joseph. Both Kansas City and St. Joseph reached their peak in receipts in 1923 and then dropped off sharply during the next five years. Wichita reached its peak in hog numbers a year later, 1924, dropped off moderately until 1926, and then started to gain again while Kansas City and St. Joseph were still losing. From 1927 until 1937 receipts at Wichita followed closely the trend of receipts at Kansas City. In 1936, the index of hog receipts at Wichita stood at 40, and, during the next two years declined to 34. During 1938 and 1939, the index rose to 57, and remained at that level in 1940.

Of the three markets Kansas City, St. Joseph, and Wichita, Kansas City has suffered most in the loss of hog receipts, St. Joseph and Wichita assuming a more important place in the distribution of hog receipts to these three markets than formerly (Fig. 24 and Table 10).

In 1923 Kansas City received 54 percent of the total hogs going to these three markets, St. Joseph received 35 percent, and Wichita 11 percent. Since that year, Kansas City has been losing its importance as a hog market when compared with St. Joseph and Wichita. The low point for Kansas City was reached in 1938 when it received only 29 percent of the total of these three markets, St. Joseph received 53 percent, and Wichita 18 percent. In 1940, Kansas City received 32 percent of the total hog receipts at these three markets, St. Joseph 51 percent, and Wichita 17 percent of the total.

On the basis of volume of hog receipts in 1940, St. Joseph ranked eighth in the United States, Kansas City twelfth, and Wichita twenty-first.

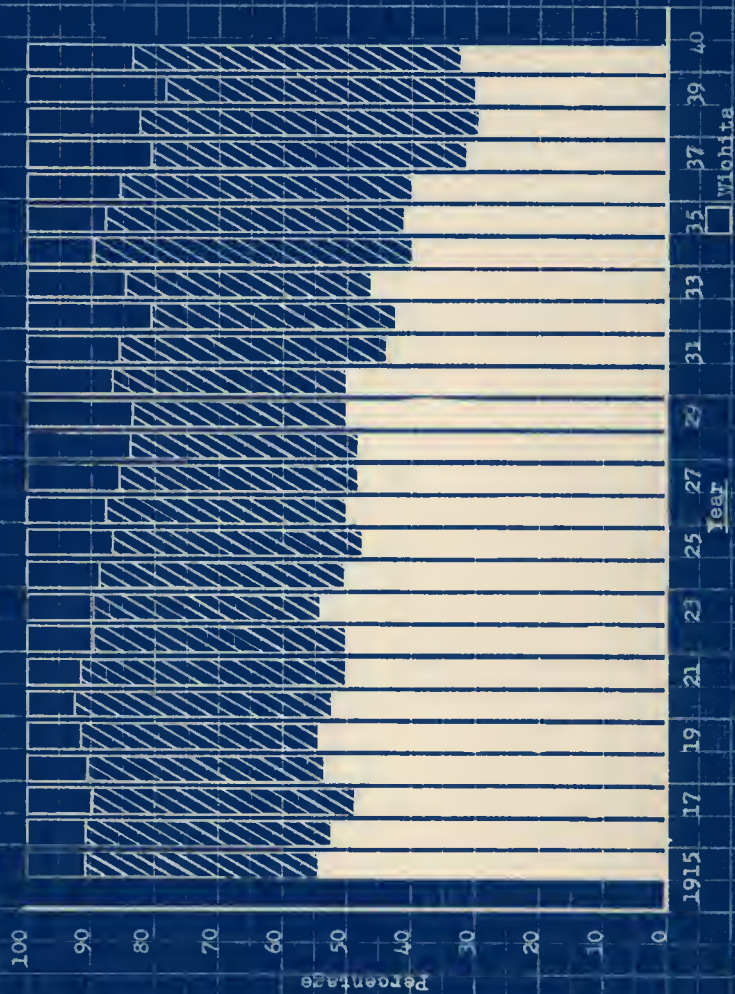


Fig. 24. Distribution of hog receipts at Kansas City, St. Joseph, and Wichita stockyards, 1915-1940.

Percent going to each market.

Table 10. Distribution of hog receipts at Kansas City, St. Joseph, and Wichita Stockyards, percentage going to each market, 1915-1940, inclusive.⁴

| Year | Percentage of total received at Kansas City | Percentage of total received at St. Joseph | Percentage of total received at Wichita |
|------|---|--|---|
| 1915 | 53.9 | 36.1 | 10.1 |
| 1916 | 51.8 | 38.2 | 10.0 |
| 1917 | 49.6 | 40.9 | 10.5 |
| 1918 | 52.9 | 37.3 | 9.8 |
| 1919 | 54.5 | 36.9 | 8.6 |
| 1920 | 51.8 | 40.2 | 8.0 |
| 1921 | 50.5 | 41.0 | 8.5 |
| 1922 | 50.2 | 39.0 | 10.8 |
| 1923 | 53.4 | 36.2 | 10.4 |
| 1924 | 49.7 | 37.9 | 12.4 |
| 1925 | 47.3 | 38.3 | 14.4 |
| 1926 | 50.7 | 36.3 | 13.0 |
| 1927 | 48.4 | 36.2 | 15.4 |
| 1928 | 47.7 | 35.7 | 16.6 |
| 1929 | 50.1 | 33.0 | 16.9 |
| 1930 | 50.0 | 36.0 | 14.0 |
| 1931 | 42.7 | 42.2 | 15.1 |
| 1932 | 42.1 | 38.0 | 19.9 |
| 1933 | 45.0 | 38.0 | 16.0 |
| 1934 | 39.2 | 49.4 | 11.4 |
| 1935 | 40.7 | 46.4 | 12.9 |
| 1936 | 39.6 | 45.8 | 14.6 |
| 1937 | 31.5 | 48.4 | 20.1 |
| 1938 | 29.4 | 52.7 | 17.9 |
| 1939 | 32.0 | 47.5 | 20.5 |
| 1940 | 32.2 | 50.6 | 17.2 |

⁴ Ibid.

Receipts of sheep at the three markets, Kansas City, St. Joseph, and Wichita, show that the number of sheep coming to each of these three markets has undergone considerable changes since 1915 (Fig. 25 and Table 11).

In 1915, the index of sheep receipts at Kansas City, using 1925-1929 as the base period, stood at 100; the index at St. Joseph was 62, and at Wichita 23. During the next 10 years, the receipts of sheep at Kansas City remained relatively stable, the index in 1925 standing at 90. St. Joseph showed little change in receipts of sheep from 1915 to 1922, but in 1923 the index of receipts started up, reaching 82 in 1925, 20 points above the 1915 level. At Wichita, the index of sheep receipts fell off slightly until 1916, but increased during the war, as did the receipts at the other two markets, reaching 46 in 1919. Receipts again fell off from 1919 to 1921, the index standing at 25 in 1921. It was in 1922 that Wichita began to increase its sheep receipts most rapidly. From 1921 to 1922 Wichita gained 39 points, and from 1922 to 1923 gained 29 more, the index standing at 93 in the latter year. Having reached this level, receipts fell off, and in 1924 the index stood at 65, rising to 70 in 1925.

Beginning in 1925, the index of sheep receipts at Kansas City started upward, reached a high point in 1931 when the index stood at 134. Since that time, the trend in sheep receipts at Kansas City has been steadily downward, and in 1940, the index of receipts had declined to 77.

During the period since 1925, sheep receipts at St. Joseph have followed a trend similar to that at Kansas City. Receipts at St. Joseph increased rather rapidly from 1925 to 1929, rising from an index of 82 in 1925 to 113 in 1929. Having reached this level, receipts tended to be stable during 1929 and 1930, and then started steadily downward. This downward trend has continued, and in 1940 the index of receipts at St. Joseph was 70.

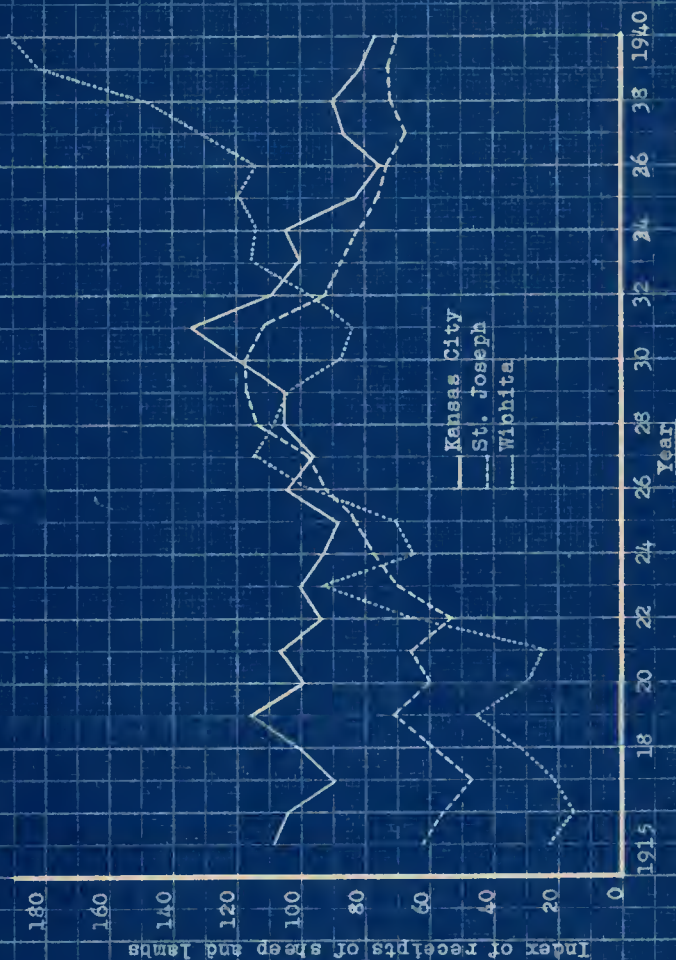


FIG. 26 Index of receipts of sheep and lambs at Kansas City, St. Joseph, and Wichita stockyards, 1915-1940. /

Average of period 1925-1929 equals 100.

Table 11. Indexes of receipts of sheep and lambs at Kansas City, St. Joseph, and Wichita Stockyards, 1915-1940, inclusive.⁴

| Year | Indexes Kansas City | Indexes St. Joseph | Indexes Wichita |
|------|------------------------|-----------------------|--------------------|
| 1915 | 106.1 | 62.6 | 23.1 |
| 1916 | 104.7 | 57.4 | 16.3 |
| 1917 | 89.2 | 48.4 | 21.3 |
| 1918 | 99.3 | 59.0 | 31.1 |
| 1919 | 115.8 | 71.8 | 45.9 |
| 1920 | 100.5 | 60.1 | 30.8 |
| 1921 | 106.0 | 66.4 | 24.7 |
| 1922 | 93.7 | 53.1 | 64.2 |
| 1923 | 99.5 | 69.9 | 93.3 |
| 1924 | 93.4 | 77.8 | 65.4 |
| 1925 | 89.3 | 81.5 | 69.6 |
| 1926 | 104.9 | 92.9 | 97.7 |
| 1927 | 96.2 | 96.2 | 113.9 |
| 1928 | 105.2 | 112.7 | 109.3 |
| 1929 | 104.4 | 116.7 | 109.5 |
| 1930 | 120.0 | 116.6 | 86.8 |
| 1931 | 133.6 | 112.2 | 83.6 |
| 1932 | 109.4 | 92.1 | 95.8 |
| 1933 | 99.5 | 88.0 | 116.3 |
| 1934 | 103.5 | 81.6 | 113.7 |
| 1935 | 83.1 | 76.2 | 118.5 |
| 1936 | 76.0 | 74.8 | 112.9 |
| 1937 | 87.4 | 67.4 | 132.3 |
| 1938 | 89.7 | 72.1 | 147.0 |
| 1939 | 81.4 | 73.2 | 184.8 |
| 1940 | 77.1 | 69.8 | 190.9 |

⁴ Ibid.

At Wichita, a somewhat different situation has existed since 1925. Receipts at this market increased sharply from 1925 to 1927, rising from an index of 70 in 1925 to 114 in 1927. Then, during the years 1928, 1929, 1930, and 1931, when both St. Joseph and Kansas City were increasing their receipts of sheep, the index at Wichita dropped from 114 in 1927 to 84 in 1931. However, beginning in 1934, the volume of sheep receipts at Wichita turned upward sharply, rising from 84 in 1931 to 116 in 1933, leveled off during 1934, 1935, and 1936, and then started a rapid increase, reaching 191 in 1940.

The percentage of the total sheep receipts of these three markets which went to each market can be seen in Fig. 26 and Table 12. This chart and table show that Wichita and St. Joseph have been receiving a larger share of the total sheep receipts of the three markets than they did in 1915.

The increase in the proportion of total receipts of these three markets going to Wichita, has been relatively constant. In 1915, Wichita received only one percent of the total of sheep receipts going to these markets. After 1915, Wichita increased its receipts of sheep, until in 1940, it received 10 percent of the total.

The proportion of the total receipts going to St. Joseph, while greater in 1940 than in 1915, was not as large as it was during the late twenties and early thirties. In 1915, 32 percent of the total sheep receipts of these three markets went to St. Joseph. By 1929, St. Joseph was receiving 46 percent of the total, and in 1940, this market received 39 percent of the total of the three markets.

As Wichita and St. Joseph gained in the proportion of the total sheep receipts of these three markets Kansas City necessarily lost. In 1915, Kansas City received 67 percent of the total receipts of sheep going to these three markets. It maintained its position fairly well through 1922, when it was

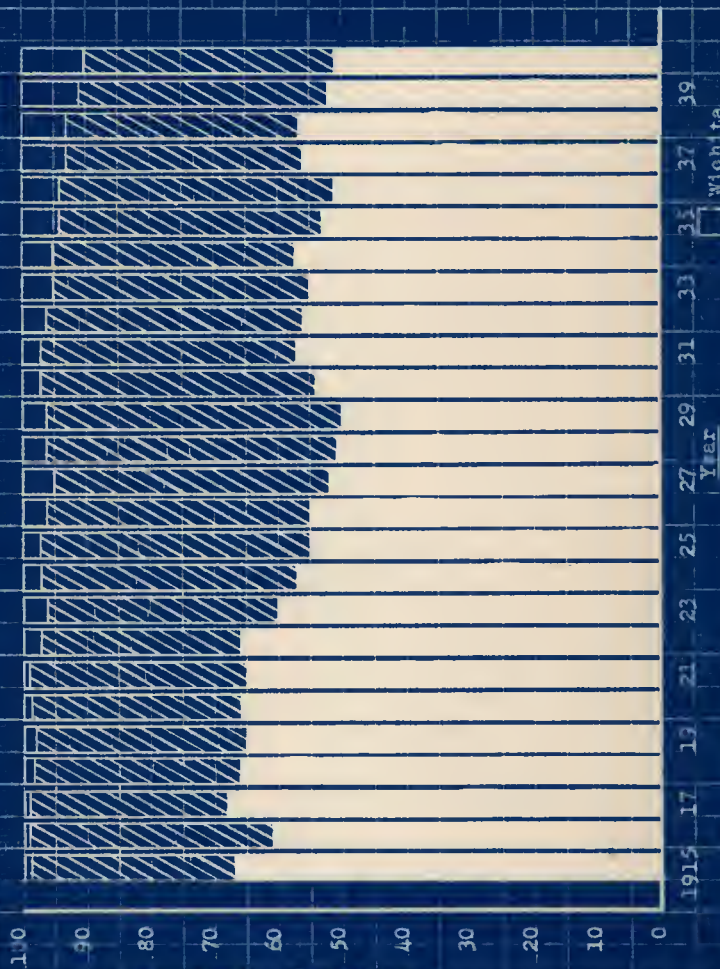


Fig. 16 Distribution of receipts of sheep and lambs at Kansas City, St. Joseph, and Wichita stockyards, 1915-1940. Percent going to each market. /

Table 12. Distribution of receipts of sheep and lambs at Kansas City, St. Joseph, and Wichita Stockyards, percentage going to each market, 1915-1940, inclusive.⁴

| Year | Percentage of total received at Kansas City | Percentage of total received at St. Joseph | Percentage of total received at Wichita |
|------|---|--|---|
| 1915 | 66.6 | 32.3 | 1.1 |
| 1916 | 68.1 | 31.1 | .8 |
| 1917 | 68.0 | 30.8 | 1.2 |
| 1918 | 65.8 | 32.6 | 1.6 |
| 1919 | 64.6 | 33.4 | 2.0 |
| 1920 | 65.7 | 32.8 | 1.5 |
| 1921 | 64.9 | 33.9 | 1.2 |
| 1922 | 66.0 | 30.6 | 3.4 |
| 1923 | 60.4 | 35.3 | 4.3 |
| 1924 | 57.3 | 39.7 | 3.0 |
| 1925 | 54.9 | 41.8 | 3.3 |
| 1926 | 55.3 | 40.8 | 3.9 |
| 1927 | 52.0 | 43.3 | 4.7 |
| 1928 | 50.7 | 45.3 | 4.0 |
| 1929 | 49.7 | 46.3 | 4.0 |
| 1930 | 53.6 | 43.4 | 3.0 |
| 1931 | 57.3 | 40.0 | 2.7 |
| 1932 | 56.5 | 39.7 | 3.8 |
| 1933 | 54.7 | 40.4 | 4.9 |
| 1934 | 57.4 | 37.8 | 4.8 |
| 1935 | 53.4 | 40.8 | 5.8 |
| 1936 | 51.6 | 42.5 | 5.9 |
| 1937 | 56.8 | 36.6 | 6.6 |
| 1938 | 55.8 | 37.3 | 6.9 |
| 1939 | 52.0 | 39.0 | 9.0 |
| 1940 | 51.4 | 38.9 | 9.7 |

⁴Ibid.

getting 66 percent of the total. Beginning in 1923, the proportion of the total receipts going to Kansas City began to decline, reaching a low in 1929, when Kansas City's share was only 50 percent. During most of the period since 1929, Kansas City has received about 55 percent of the total, but in 1940, its share had slipped back to 51 percent.

For the year 1940, among all public stockyards in the United States, Kansas City ranked sixth in sheep receipts, St. Joseph ninth, and Wichita twenty-second.

Trends in Slaughter

Tables 13 through 16 present the relative importance of Kansas and regions of the United States in regard to federally inspected slaughter since 1921.

The trend in federally inspected cattle slaughter in Kansas as a percentage of federally inspected slaughter for the nation as a whole, definitely has been downward. The high came in 1923, when Kansas slaughtered 14.3 percent of the cattle slaughtered under federal inspection in the United States. Since then the importance of Kansas in the national picture has been decreasing, only 8.1 percent of the total federally inspected slaughter of cattle being slaughtered in Kansas in 1940.

The area in which the greatest increase in the proportion of federally inspected cattle slaughter has occurred is the Northwestern Corn Belt States, including Minnesota, Iowa, North Dakota, South Dakota, and Nebraska. In 1922, this area killed only 18 percent of the total federally inspected cattle slaughter, but by 1940 its proportion had increased to 30.7 percent. This increase has probably been due for the most part, to the rise of interior

Table 13. Trends in cattle slaughter in the United States by sections and Kansas, 1921 - 1940.

Expressed as a percent of total federally inspected cattle slaughter in United States.^{1/2}

| Year | Kansas | Atlantic | North : States | South : States | Eastern : States | Northwestern : States | Southwestern : States | Central : States | Mountain : States | Pacific : States |
|------|--------|----------|-------------------|-------------------|---------------------|--------------------------|--------------------------|---------------------|----------------------|---------------------|
| 1921 | 13.6 | 12.7 | 0.5 | 34.7 | 19.3 | 19.7 | 7.3 | 1.9 | 3.9 | 4.2 |
| 1922 | 13.6 | 13.0 | 0.5 | 35.4 | 18.0 | 19.7 | 7.7 | 1.5 | 4.2 | 3.6 |
| 1923 | 14.3 | 11.6 | 0.5 | 34.8 | 19.9 | 20.2 | 8.0 | 1.4 | 3.6 | 3.7 |
| 1924 | 13.7 | 11.5 | 0.5 | 34.4 | 19.9 | 19.6 | 9.0 | 1.4 | 3.7 | 3.7 |
| 1925 | 13.8 | 10.8 | 0.6 | 33.4 | 20.5 | 19.4 | 10.0 | 1.6 | 3.6 | 3.6 |
| 1926 | 13.4 | 10.1 | 0.7 | 33.3 | 22.4 | 19.6 | 8.6 | 1.7 | 3.6 | 3.9 |
| 1927 | 12.7 | 10.0 | 0.8 | 34.2 | 23.1 | 18.7 | 7.5 | 1.8 | 4.1 | 4.0 |
| 1928 | 12.1 | 9.9 | 1.0 | 33.1 | 23.7 | 17.9 | 8.3 | 2.0 | 4.0 | 4.1 |
| 1929 | 11.2 | 10.0 | 1.3 | 33.6 | 24.3 | 16.8 | 7.9 | 2.1 | 4.0 | 4.1 |
| 1930 | 11.4 | 10.0 | 1.0 | 32.6 | 25.5 | 17.0 | 7.7 | 2.1 | 4.0 | 4.0 |
| 1931 | 11.0 | 10.1 | 0.7 | 32.1 | 27.5 | 16.7 | 7.1 | 1.8 | 4.0 | 4.1 |
| 1932 | 13.0 | 11.0 | 0.7 | 31.4 | 28.0 | 15.5 | 7.3 | 2.0 | 4.1 | 4.1 |
| 1933 | 9.6 | 10.9 | 0.7 | 31.4 | 29.5 | 14.8 | 6.7 | 1.9 | 4.1 | 4.0 |
| 1934 | 10.2 | 9.5 | 0.7 | 31.1 | 30.2 | 15.9 | 6.7 | 2.0 | 4.0 | 4.6 |
| 1935 | 10.0 | 10.3 | 2.0 | 28.3 | 25.6 | 15.0 | 10.5 | 3.7 | 4.6 | 4.4 |
| 1936 | 9.2 | 9.0 | 2.0 | 28.5 | 28.0 | 14.1 | 11.5 | 2.5 | 4.4 | 4.4 |
| 1937 | 9.6 | 9.2 | 1.9 | 28.7 | 27.8 | 14.4 | 11.1 | 2.5 | 4.4 | 4.6 |
| 1938 | 8.9 | 8.6 | 2.3 | 27.4 | 29.1 | 13.3 | 12.1 | 2.6 | 4.6 | 4.6 |
| 1939 | 8.2 | 9.4 | 2.2 | 28.2 | 29.5 | 12.5 | 11.6 | 2.6 | 4.6 | 4.6 |
| 1940 | 8.1 | 8.5 | 2.2 | 27.5 | 30.7 | 12.5 | 9.9 | 2.6 | 4.6 | 4.6 |

Table 14. Trends in federally inspected calf slaughter in Kansas and sections of United States, 1921 - 1940.

Expressed as a percentage of total federally inspected calf slaughter in the United States./2

| Year | Kansas | Atlantic | North | South | Eastern | Northwestern | Southwestern | South | Inter- | |
|------|--------|----------|--------|--------|-----------|--------------|--------------|--------|--------|--------|
| | States | States | States | States | Corn Belt | Corn Belt | Corn Belt | States | States | States |
| 1921 | 7.3 | 27.7 | 0.7 | 36.8 | 13.4 | 10.8 | 8.7 | 0.7 | 1.2 | |
| 1922 | 6.9 | 25.4 | 0.7 | 36.2 | 13.0 | 9.7 | 9.8 | 0.5 | 1.7 | |
| 1923 | 9.1 | 25.5 | 0.9 | 34.6 | 15.1 | 11.3 | 10.2 | 0.5 | 1.4 | |
| 1924 | 9.5 | 24.1 | 0.7 | 33.8 | 15.3 | 12.0 | 11.9 | 0.6 | 1.6 | |
| 1925 | 8.7 | 22.7 | 0.6 | 33.2 | 16.6 | 11.6 | 12.9 | 0.7 | 1.7 | |
| 1926 | 6.8 | 23.0 | 0.9 | 32.1 | 19.0 | 11.2 | 12.7 | 0.7 | 1.4 | |
| 1927 | 6.9 | 22.3 | 1.0 | 32.9 | 21.6 | 10.0 | 9.9 | 0.8 | 1.5 | |
| 1928 | 6.4 | 22.0 | 0.8 | 34.0 | 19.4 | 9.6 | 12.1 | 0.8 | 1.3 | |
| 1929 | 5.2 | 21.8 | 0.9 | 35.3 | 19.6 | 8.3 | 12.0 | 0.9 | 1.2 | |
| 1930 | 5.4 | 22.8 | 0.7 | 33.5 | 20.3 | 8.7 | 11.8 | 0.9 | 1.3 | |
| 1931 | 5.3 | 23.0 | 0.5 | 34.6 | 20.6 | 8.8 | 10.5 | 0.8 | 1.2 | |
| 1932 | 5.2 | 23.6 | 0.5 | 33.5 | 22.8 | 8.9 | 8.5 | 0.9 | 1.3 | |
| 1933 | 5.7 | 24.8 | 0.4 | 33.7 | 22.5 | 9.3 | 7.4 | 0.8 | 1.1 | |
| 1934 | 7.3 | 21.6 | 0.4 | 32.4 | 24.3 | 11.3 | 7.9 | 0.8 | 1.3 | |
| 1935 | 9.7 | 18.4 | 0.4 | 29.6 | 24.4 | 13.9 | 9.5 | 2.1 | 1.7 | |
| 1936 | 7.1 | 21.2 | 1.2 | 29.7 | 20.2 | 12.7 | 12.6 | 1.0 | 1.4 | |
| 1937 | 8.4 | 19.0 | 1.1 | 28.3 | 24.2 | 13.8 | 11.1 | 1.0 | 1.5 | |
| 1938 | 7.0 | 20.3 | 1.7 | 29.3 | 22.0 | 11.7 | 12.3 | 1.0 | 1.7 | |
| 1939 | 6.4 | 21.0 | 1.7 | 30.4 | 21.0 | 12.1 | 12.2 | 0.8 | 1.7 | |
| 1940 | 5.9 | 21.0 | 1.3 | 32.3 | 20.0 | 10.5 | 12.1 | 0.9 | 1.4 | |

Table 15. Trends in federally inspected slaughter of sheep and lambs in Kansas and sections of United States, 1921 - 1940.

Expressed as a percentage of total federally inspected slaughter of sheep and lambs in United States.^{1/2}

| Year | Kansas | North Atlantic | South Atlantic | East | Northwestern Corn Belt | Southwestern Corn Belt | South : States | Inter- : States | Central Mountain | Pacific |
|------|--------|----------------|----------------|--------|------------------------|------------------------|----------------|-----------------|------------------|---------|
| | | States | States | States | States | States | States | States | States | States |
| 1921 | 9.5 | 25.4 | 0.1 | 33.0 | 16.5 | 15.7 | 1.3 | 1.8 | 6.2 | |
| 1922 | 9.6 | 26.4 | 0.1 | 31.0 | 16.6 | 15.7 | 1.2 | 1.7 | 7.3 | |
| 1923 | 9.6 | 25.8 | 0.1 | 29.4 | 19.0 | 18.3 | 1.4 | 1.8 | 6.2 | |
| 1924 | 9.5 | 26.4 | 0.04 | 28.7 | 17.0 | 16.6 | 1.6 | 1.7 | 8.0 | |
| 1925 | 9.5 | 25.1 | 0.04 | 30.1 | 18.2 | 17.1 | 1.1 | 1.6 | 6.8 | |
| 1926 | 9.9 | 25.1 | 0.1 | 29.6 | 17.5 | 18.0 | 1.9 | 1.6 | 6.2 | |
| 1927 | 9.6 | 25.6 | 0.1 | 28.4 | 18.2 | 18.2 | 1.7 | 1.8 | 6.0 | |
| 1928 | 10.1 | 25.1 | 0.1 | 27.2 | 19.5 | 19.1 | 1.8 | 1.6 | 5.6 | |
| 1929 | 10.7 | 24.7 | 0.1 | 25.4 | 21.0 | 19.6 | 2.1 | 1.7 | 5.4 | |
| 1930 | 9.9 | 26.3 | 0.1 | 24.3 | 22.1 | 18.4 | 2.1 | 1.8 | 4.9 | |
| 1931 | 9.4 | 26.3 | 0.1 | 23.2 | 23.2 | 16.7 | 3.4 | 1.8 | 5.3 | |
| 1932 | 9.0 | 26.6 | 0.1 | 22.8 | 25.5 | 15.5 | 4.9 | 2.1 | 5.5 | |
| 1933 | 8.3 | 25.8 | 0.1 | 24.9 | 23.2 | 14.6 | 4.6 | 1.7 | 5.1 | |
| 1934 | 8.7 | 23.0 | 0.04 | 26.5 | 25.8 | 15.2 | 2.8 | 1.6 | 5.1 | |
| 1935 | 9.8 | 23.1 | 0.04 | 26.6 | 26.3 | 14.1 | 3.2 | 1.5 | 5.2 | |
| 1936 | 6.8 | 24.5 | 0.1 | 23.4 | 27.7 | 12.9 | 3.5 | 2.1 | 5.9 | |
| 1937 | 8.2 | 21.5 | 0.1 | 24.6 | 26.9 | 13.8 | 5.0 | 2.5 | 5.6 | |
| 1938 | 7.0 | 22.8 | 0.1 | 24.0 | 27.0 | 12.4 | 5.5 | 3.0 | 5.2 | |
| 1939 | 7.7 | 21.8 | 0.06 | 22.9 | 28.8 | 13.0 | 5.2 | 2.9 | 5.3 | |
| 1940 | 7.6 | 20.0 | 0.06 | 21.4 | 31.7 | 13.1 | 5.6 | 2.5 | 5.6 | |

Table 16. Trends in federally inspected slaughter of hogs in Kansas and sections of the United States, 1921 - 1940.

Expressed as a percentage of total federally inspected hog slaughter in United States. /2

| Year | Kansas | North Atlantic | South Atlantic | East Corn Belt | West Corn Belt | Southwestern | South-Central | Inter-Mountain | Pacific |
|------|--------|----------------|----------------|----------------|----------------|--------------|---------------|----------------|---------|
| | States | States | States | States | States | States | States | States | States |
| 1921 | 8.0 | 13.2 | 1.5 | 36.4 | 22.1 | 16.0 | 2.9 | 1.0 | 1.9 |
| 1922 | 8.6 | 13.3 | 1.7 | 35.1 | 21.6 | 16.4 | 3.4 | 1.2 | 2.3 |
| 1923 | 9.3 | 16.3 | 1.5 | 34.6 | 22.9 | 17.7 | 3.2 | 1.1 | 2.2 |
| 1924 | 8.5 | 17.2 | 1.4 | 34.7 | 25.1 | 15.4 | 2.9 | 1.2 | 2.1 |
| 1925 | 7.9 | 16.9 | 1.6 | 32.6 | 27.6 | 14.7 | 3.0 | 1.3 | 2.3 |
| 1926 | 9.2 | 17.1 | 1.6 | 32.1 | 29.6 | 13.4 | 2.6 | 1.4 | 2.2 |
| 1927 | 7.4 | 16.1 | 1.6 | 31.9 | 30.4 | 13.8 | 2.6 | 1.3 | 2.3 |
| 1928 | 8.0 | 16.5 | 1.7 | 32.2 | 28.3 | 14.4 | 3.0 | 1.4 | 2.5 |
| 1929 | 8.8 | 15.5 | 1.7 | 33.3 | 27.2 | 14.7 | 3.3 | 1.4 | 2.3 |
| 1930 | 7.5 | 15.1 | 1.3 | 33.8 | 29.5 | 13.2 | 2.9 | 1.4 | 2.3 |
| 1931 | 6.8 | 14.9 | 1.5 | 33.3 | 31.3 | 12.5 | 2.7 | 1.5 | 2.3 |
| 1932 | 7.3 | 15.3 | 1.3 | 31.2 | 32.3 | 13.3 | 2.7 | 1.5 | 2.4 |
| 1933 | 8.6 | 14.5 | 1.4 | 31.7 | 30.2 | 14.5 | 3.5 | 1.6 | 2.6 |
| 1934 | 7.9 | 14.5 | 1.4 | 34.6 | 29.7 | 12.7 | 3.3 | 1.6 | 2.2 |
| 1935 | 7.4 | 15.4 | 1.6 | 34.4 | 29.0 | 11.3 | 3.7 | 1.6 | 2.5 |
| 1936 | 6.1 | 16.1 | 2.2 | 31.3 | 30.1 | 11.7 | 4.5 | 1.4 | 2.7 |
| 1937 | 5.5 | 15.0 | 2.7 | 32.3 | 30.6 | 10.8 | 4.2 | 1.7 | 2.7 |
| 1938 | 4.9 | 15.3 | 2.9 | 32.0 | 31.0 | 10.0 | 4.5 | 1.4 | 2.9 |
| 1939 | 5.3 | 14.3 | 2.9 | 30.8 | 33.2 | 10.6 | 4.3 | 1.4 | 2.3 |
| 1940 | 5.9 | 12.3 | 2.4 | 30.1 | 35.5 | 11.3 | 3.3 | 1.5 | 3.0 |

packers in Iowa and southern Minnesota.

Table 16 shows trends in federally inspected hog slaughter. As in the case of cattle, the percentage of slaughter represented by Kansas has decreased appreciably, falling from 9.8 percent in 1923 to 4.9 percent in 1938, and rising to 5.9 percent by 1940.

Again, as in the case of cattle, the greatest increase in federally inspected slaughter of hogs has been in the Northwestern Corn Belt States. In 1922, this group of states slaughtered 21.6 percent of the national total, whereas in 1940, their proportion of total federally inspected hog slaughter had risen to 35.5 percent.

Federally inspected slaughter of sheep and lambs in Kansas as a percentage of the national total also has decreased, but not to the extent of the decline for the other species of livestock. In 1929, Kansas slaughtered 10.7 percent of the nation's total federally inspected slaughter of sheep and lambs, but by 1940, Kansas' share had declined to 7.6 percent.

As with cattle and hogs, the importance of the Northwest Corn Belt in the picture of total federally inspected slaughter of sheep and lambs has increased materially. This area has nearly doubled its proportion of the nation's slaughter of sheep and lambs, slaughtering 16.5 percent of the national total in 1921, and 31.7 percent in 1940. Other areas in which the proportion of the nation's slaughter of sheep and lambs increased were the South-Central and the Intermountain States.

The story was much the same for federally inspected calf slaughter. Kansas' share fell from 9.7 percent of the nation's total in 1935 to 5.9 percent in 1940. The Northwest Corn Belt increased from 13 percent in 1922 to 20 percent in 1940.

Table 17 presents the trend in federally inspected slaughter per 1,000 population in the United States and sections of the United States from 1910 to 1940.

The trend in federally inspected slaughter has not tended to follow the trend in livestock numbers. There are several factors which affect this relationship. In the first place, federally inspected slaughter does not account for the total slaughter. Inspection of live animals, meats and meat products entering interstate and foreign commerce does not apply to retail butchers and retail meat dealers supplying their customers, or to home slaughter on the farm. All of the establishments in which the meat products are distributed in the states in which these establishments are located cannot obtain federal inspection.

The number of establishments under federal inspection had not changed greatly since the beginning of this service in 1907. That year there were 669 establishments under federal inspection, 318 of them conducting slaughtering, and in 1939 there were 646 plants under federal inspection, 264 engaged in slaughtering. Therefore, the fact that these federally inspected plants have tended to maintain their slaughter per 1000 people in spite of the increasing population indicates that the volume of slaughter in these plants must have increased as rapidly as did population.

Another complicating factor in the case of cattle and sheep is that not all of these animals were kept primarily for meat production purposes. In 1940, 37 percent of all cattle were kept primarily for milk production, and the same year on January 1, 83 percent of the total sheep and lambs were listed as stock sheep and lambs. This classification does not include sheep and lambs on feed, but does include all sheep kept for wool or breeding purposes, many of which were not available for slaughter in that year.

Table 17. Number of livestock slaughtered under federal inspection per thousand population, United States and sections of the United States, by ten-year periods, 1910-1940./2

| Area | Class of livestock | 1910 | 1920 | 1930 | 1940 | Percent 1940 is of 1930 |
|-------------------------------|--------------------|--------|--------|--------|--------|-------------------------|
| United States | Cattle | 86.5 | 78.3 | 67.4 | 72.6 | 107.7 |
| | Hogs | 300.8 | 368.7 | 380.2 | 354.4 | 93.2 |
| | Calves | 24.9 | 39.9 | 36.5 | 39.6 | 107.1 |
| | Sheep & Lambs | 121.2 | 116.6 | 124.6 | 131.1 | 105.2 |
| North Atlantic States | Cattle | 37.3 | 37.1 | 23.9 | 24.7 | 103.3 |
| | Hogs | 204.8 | 208.5 | 204.1 | 159.2 | 78.0 |
| | Calves | 26.2 | 33.4 | 29.6 | 30.5 | 103.0 |
| | Sheep & Lambs | 107.0 | 86.9 | 116.9 | 95.9 | 82.0 |
| South Atlantic States | Cattle | 1.8 | 4.4 | 5.3 | 11.7 | 220.8 |
| | Hogs | 18.6 | 60.6 | 51.7 | 63.8 | 123.4 |
| | Calves | 1.0 | 2.6 | 2.0 | 5.3 | 265.0 |
| | Sheep & Lambs | 0.5 | 0.7 | 0.7 | 0.6 | 85.7 |
| South-Central States | Cattle | 36.9 | 42.6 | 28.9 | 39.9 | 138.0 |
| | Hogs | 55.9 | 55.6 | 62.0 | 75.0 | 121.0 |
| | Calves | 12.9 | 21.6 | 24.1 | 26.4 | 109.5 |
| | Sheep & Lambs | 6.3 | 9.9 | 14.6 | 40.8 | 279.5 |
| Eastern Corn Belt States | Cattle | 156.5 | 162.9 | 106.8 | 98.7 | 92.4 |
| | Hogs | 560.1 | 680.5 | 624.6 | 528.4 | 84.6 |
| | Calves | 47.6 | 72.8 | 59.4 | 63.3 | 106.6 |
| | Sheep & Lambs | 242.6 | 208.1 | 147.0 | 138.9 | 94.5 |
| Northwestern Corn Belt States | Cattle | 168.9 | 239.5 | 271.2 | 370.6 | 136.7 |
| | Hogs | 718.4 | 1167.8 | 1768.9 | 2086.2 | 117.9 |
| | Calves | 22.9 | 78.8 | 117.3 | 131.3 | 111.9 |
| | Sheep & Lambs | 210.2 | 279.4 | 434.2 | 689.2 | 158.7 |
| Southwestern Corn Belt States | Cattle | 392.6 | 371.5 | 256.0 | 213.9 | 83.6 |
| | Hogs | 1113.2 | 1285.8 | 1119.5 | 943.6 | 84.3 |
| | Calves | 58.9 | 107.6 | 70.4 | 98.4 | 139.8 |
| | Sheep & Lambs | 312.5 | 373.6 | 511.9 | 403.3 | 78.8 |
| Intermountain States | Cattle | 28.4 | 60.5 | 46.4 | 59.0 | 127.2 |
| | Hogs | 91.5 | 126.7 | 176.1 | 172.7 | 98.1 |
| | Calves | 4.5 | 10.4 | 10.8 | 11.5 | 106.5 |
| | Sheep & Lambs | 31.5 | 106.7 | 72.3 | 104.3 | 144.3 |
| Pacific States | Cattle | 77.0 | 61.0 | 41.2 | 45.2 | 109.7 |
| | Hogs | 91.8 | 105.9 | 131.3 | 144.8 | 110.3 |
| | Calves | 11.9 | 8.4 | 7.0 | 7.2 | 102.9 |
| | Sheep & Lambs | 190.3 | 132.2 | 92.2 | 100.2 | 108.7 |
| Kansas | Cattle | | 623 | 493 | 415 | 84.1 |
| | Hogs | | 1700 | 1636 | 1624 | 99.2 |
| | Calves | | 174 | 130 | 163 | 125.3 |
| | Sheep & Lambs | | 598 | 885 | 721 | 81.4 |

Considering the specific sections of the United States, it can be seen that the Northwestern Corn Belt States stand out above all others in regard to the volume of federally inspected slaughter per thousand population. This area has nearly tripled its volume of federally inspected slaughter per thousand population since 1910. In 1910, packers in the Northwestern Corn Belt were slaughtering under federal inspection 169 cattle, 718 hogs, 23 calves and 210 sheep and lambs per 1,000 population. By 1940 this had increased to 371 cattle, 2,036 hogs, 131 calves, and 689 lambs and sheep per 1,000 population.

The trends of federally inspected slaughter per 1,000 population in Kansas during the Census years 1920, 1930, and 1940, show possibly two significant long-time trends in slaughter. The number of cattle slaughtered under federal inspection in Kansas per 1,000 population seems to have suffered a definite decrease since 1920, falling from 623 per 1,000 population in that year to 415 in 1940. On the other hand, the number of sheep slaughtered under federal inspection per 1,000 population seems to have increased, rising from 598 in 1920 to 885 in 1930, and standing at 721 in 1940.

Considering numbers of livestock slaughtered in comparison with numbers of livestock produced, there were four areas in which the number of at least one species of livestock slaughtered under federal inspection was greater than the number of that species of livestock produced in the area.

As would be expected, the North Atlantic States had the greatest margin of slaughter. In this area the federally inspected slaughter of cattle and calves, sheep and lambs, and hogs was greater than the production. In the Northwestern and Southwestern Corn Belt areas the slaughter of sheep and lambs under federal inspection exceeded the production for the area and the

same was true for hogs in Kansas. In the Pacific States, and principally in California, the slaughter of hogs exceeded the production, necessitating the shipment of hogs from Kansas and the rest of the Western Corn Belt.

Seasonal Variation in Livestock Slaughter

The seasonal variation in the number of the various species of livestock slaughtered constitutes one of the most important factors affecting the successful operation of a packinghouse.

A uniform volume of slaughter throughout the year represents an ideal which every packer would like to attain.

A few of the more important advantages which could be obtained as the result of a uniform seasonal volume of slaughter are as follows:

1. Permits the continuous employment of a force of experienced workers;
 - a. Manual dexterity is improved by constant employment at one task.
 - b. No one waiting for instructions, everyone knows what he has to do, and does it.
 - c. Increases the satisfaction of the workers with their jobs.
 - (1) Steady, relatively permanent employment.
 - (2) Less danger from strikes, etc.
 - (3) Workers may be willing to accept lower wages in view of the prospect of steady, permanent employment.
 - (4) Better management-employee relationships can be developed.
 - (5) May lead to increased loyalty on the part of the workers for their firm and its products.
2. Lowers processing costs per unit of product.
 - a. Permits the utilization of machinery, equipment, buildings, etc. to nearer their full capacity.

- b. Permits more accurate estimation of future needs, and often makes possible savings through "forward buying" of supplies during periods when they are relatively low in price.
- c. May bring about savings in power costs as in the case of electric rates which favor the consumer having a steady demand with no great seasonal power peaks to require the installation of heavier facilities than normally needed.
- d. Might enable the smaller packer to enter the field of by-product processing provided he could obtain equipment of a size adapted to his needs.

The seasonal trend of federally inspected livestock slaughter in Kansas and the United States is presented in Figs. 27, 28, and 29, and Table 18.

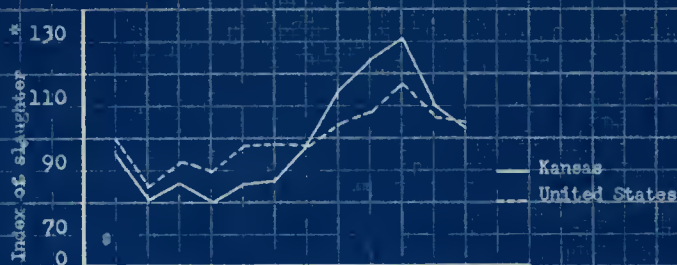
The seasonal movement of cattle slaughter under federal inspection in Kansas tended to follow the general seasonal movement in the United States except that the movement in Kansas was more extreme (Fig. 27 and Table 18).

The month of lowest slaughter of cattle under federal inspection, both in Kansas and the United States, was February, the indexes of cattle slaughter standing at 80 and 84, respectively.

The season's peak in federally inspected cattle slaughter came in October, the index in Kansas being 131, and in the entire United States 118. This represented a range of 51 index points between the season's low and the season's high for Kansas, and 34 points range for the nation as a whole.

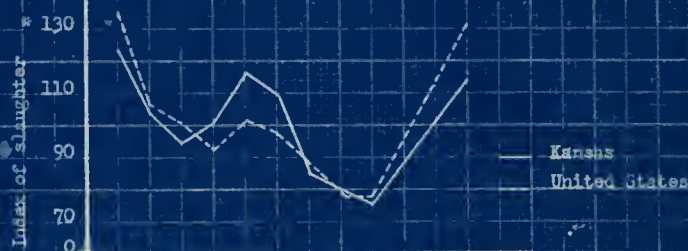
The height of the fall peak of cattle slaughter in Kansas results from the large number of grass-fat cattle that move from the Flint Hills and other pasture regions of the state during the fall and early winter months.

Slaughter of cattle in Kansas averaged nearly 10 index points below that of the United States during the months of March, April, May, and June,



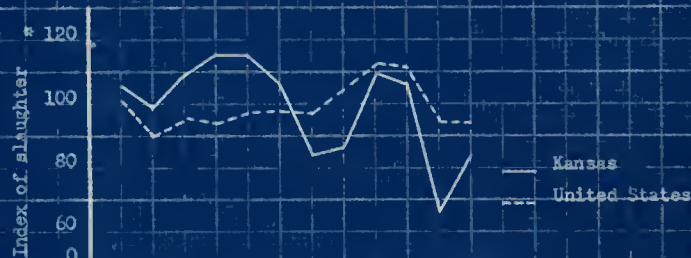
J. F. M. A. M. J. J. A. S. O. N. D.

Fig. 27 Cattle: Indexes of the average seasonal variation of Federally inspected slaughter in Kansas and the United States, 1920-1940. \angle



J. F. M. A. M. J. J. A. S. O. N. D.

Fig. 28 Hogs: Indexes of the average seasonal variation of Federally inspected slaughter in Kansas and the United States, 1920-1940. \angle



J. F. M. A. M. J. J. A. S. O. N. D.

Fig. 29 Sheep and lambs: Indexes of the average seasonal variation of Federally inspected slaughter in Kansas and the United States, 1920-1940. \angle

* Yearly average seasonal variation equals 100.

Table 18. Indexes of the average seasonal variation of federally inspected slaughter in Kansas and the United States, 1920-1940.⁵

| Month | Index of federally inspected slaughter | | | | | |
|-----------|--|------|--------|------|-----------------|------|
| | Cattle | | Hogs | | Sheep and lambs | |
| | Kansas | U.S. | Kansas | U.S. | Kansas | U.S. |
| January | 96 | 100 | 124 | 133 | 106 | 102 |
| February | 80 | 84 | 104 | 104 | 99 | 91 |
| March | 86 | 93 | 95 | 98 | 110 | 96 |
| April | 81 | 90 | 101 | 92 | 116 | 95 |
| May | 86 | 98 | 117 | 99 | 116 | 98 |
| June | 87 | 99 | 110 | 96 | 107 | 99 |
| July | 98 | 98 | 86 | 86 | 85 | 98 |
| August | 116 | 105 | 80 | 78 | 87 | 106 |
| September | 126 | 108 | 76 | 77 | 112 | 113 |
| October | 131 | 118 | 89 | 95 | 108 | 111 |
| November | 109 | 107 | 102 | 111 | 67 | 96 |
| December | 104 | 100 | 116 | 131 | 67 | 95 |

⁵Calculated from data obtained from the Agricultural Marketing Service and from the Annual Summary of Livestock, Poultry, and Wool, 1940.

but recovered rapidly and averaged nearly 13 points above the index for the United States during August, September, and October. Thus, insofar as the Kansas packer is concerned, he has less advantage in uniformity of seasonal cattle slaughter than the average packer in the United States.

The slaughter of hogs under federal inspection in Kansas as an average for the period 1920-1940, was subject to less seasonal fluctuation than was similar slaughter in the entire United States during the same period. As has been pointed out in the case of cattle, this greater uniformity of seasonal slaughter represents a definite advantage to the Kansas packer.

Table 18 and Fig. 28 show the average seasonal fluctuation in federally inspected hog slaughter in Kansas and the United States from 1920 to 1940. Probably the most striking difference between the seasonal fluctuation of hog slaughter in the United States and in Kansas was that between the level of the two summer peaks. The summer peak of federally inspected hog slaughter in Kansas was much nearer the winter peak than it was as an average for the United States. The summer peak in Kansas reached an index of 117, only seven index points below the winter peak; while as an average for the United States, the summer peak stood at an index of 99, 34 points below the winter peak of 133. This difference was due, for the most part, to the fact that the fall pig crop in Kansas was equal to 75.5 percent of the spring pig crop as an average of the years 1924-1940, whereas in the United States as a whole, the fall pig crop was only 54.8 percent as large as the spring pig crop. This indicates that the Kansas packer should be able to keep his plant operating nearer to its capacity during the summer months than could the average packer in the United States.

The second difference between the seasonal variation of federally inspected hog slaughter of Kansas and that of the United States was that in Kansas the winter peak of federally inspected hog slaughter, while about eight percent above the summer peak, was still about 10 percent below the winter peak for the entire United States. This may mean a saving to the Kansas packer in that he will not incur as great an overhead cost in his pork operations because of facilities designed to carry peak loads, which must stand idle in periods of normal and below normal slaughter.

The seasonal fluctuation in federally inspected slaughter of sheep and lambs in Kansas tended to be more extreme than for the United States as a whole, and to have two definite peak periods whereas federally inspected slaughter of sheep and lambs over the nation as a whole had but one peak (Fig. 29).

Figure 29 and Table 18 show the seasonal variation in federally inspected slaughter of sheep and lambs for Kansas and the United States as an average of the period 1920-1940.

In considering slaughter for the United States as a whole, it can be seen that the index of slaughter of sheep and lambs under federal inspection continued at a level in the nineties during the six months February through July, and then rose about 15 index points to a high of about 112 during September and October. The index fell back into the nineties during November and December, and rose only slightly during January.

However, in Kansas, a different situation existed. Beginning in February with an index of 99 for federally inspected slaughter of sheep and lambs, the slaughter increased during March and April, and stood at an index of 116 during April and May. This peak represents to a large extent fed lambs coming

out of Kansas feed lots, many having been pastured on wheat. Having reached a peak during April and May, sheep and lamb slaughter in Kansas again fell off during June, July, and August, the index standing at 87 during that month. The second peak in federally inspected slaughter of sheep and lambs came in September and October, the index standing at 112 in September and 108 in October. This peak represents the heavy fall marketings of spring lambs which have been on pasture and feed during the summer. This peak practically coincides with the peak in slaughter over the nation as a whole, but the low on each side is more extreme in Kansas than for the nation as a whole. From the high of 108 in October, the index of slaughter of sheep and lambs under federal inspection in Kansas dropped to 67 in November, the low for the year, rising to 87 during December.

Figures 30, 31, and Table 19 are presented as an example of the difference which may exist in seasonal slaughter of cattle and hogs between terminal and interior packers. The data given here are for the year 1940. The slaughter index for Kansas City packers was calculated from reports of federally inspected slaughter, while the index for interior packers was obtained from confidential slaughter records obtained directly from the packers concerned. These figures should not be taken as typical, but serve only to show the situation as it existed in 1940. Due to the seasonality of livestock production, it would be expected that seasonal slaughter in both terminal and interior plants would tend to move together. In general this is true; however, it is the difference in the extent of this seasonal movement between the two groups of packers that can be considered significant.

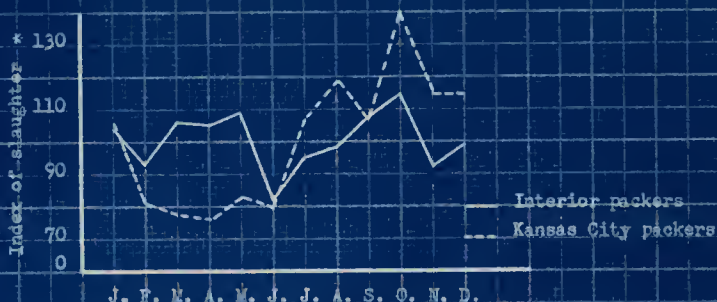


Fig. 30 Cattle: Indexes of the average seasonal variation of slaughter by 6 interior Kansas meat-packers, 1940, compared with that of Kansas City packers the same year. \angle

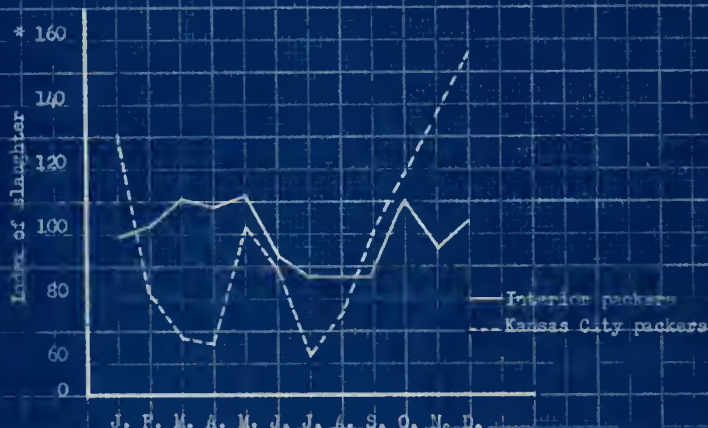


Fig. 31 Hogs: Indexes of the average seasonal variation of slaughter by 6 interior Kansas meat-packers, 1940, compared with that of Kansas City packers the same year. \angle

* Yearly average slaughter equals 100.

Table 19. Seasonal variation in slaughter of terminal (Kansas City) packers compared with that of six interior Kansas packers, 1940.⁶

| Month | Index of slaughter, 1940 | | | |
|-----------|--------------------------|----------|-------------|----------|
| | Cattle | | Hogs | |
| | Kansas City | Interior | Kansas City | Interior |
| January | 104 | 103 | 135 | 100 |
| February | 82 | 92 | 83 | 102 |
| March | 78 | 106 | 70 | 111 |
| April | 76 | 104 | 67 | 109 |
| May | 81 | 109 | 103 | 112 |
| June | 80 | 81 | 91 | 94 |
| July | 106 | 95 | 62 | 88 |
| August | 118 | 98 | 76 | 89 |
| September | 106 | 107 | 102 | 92 |
| October | 140 | 115 | 119 | 112 |
| November | 115 | 93 | 136 | 97 |
| December | 114 | 97 | 156 | 104 |
| Range | 64 | 34 | 94 | 24 |

⁶ Data from the Agricultural Marketing Service and from confidential slaughter reports of six interior meat-packers in Kansas, 1940.

In considering cattle slaughter, for the terminal packers the month of heaviest slaughter during 1940 was October, the index, based on the yearly average as 100, standing at 140 in that month. Their month of lowest cattle slaughter was April, with an index of 76. Interior Kansas packers also slaughtered more cattle in October than in any other month during 1940, their index of slaughter for that month standing at 115. During 1940 the fewest cattle were slaughtered by interior packers during June, the index for that month being 81.

Considering the seasonal slaughter of hogs, for terminal packers in Kansas, it is apparent that December (index 156) marked the month of greatest slaughter during 1940, and that April (index 67) marked the lowest. Interior packers during 1940 slaughtered their greatest number of hogs during the months of May

and October, the index standing at 112 in each of these months. Fewest hogs were slaughtered in July (index 88).

The bottom row of Table 19 shows the range in the seasonal variation in the slaughter of cattle and hogs by interior and terminal packers of Kansas during 1940. The range in cattle slaughter was approximately twice as great for terminal as for interior packers, and the range in the slaughter of hogs by terminal packers four times that of interior packers.

In the beginning of this section on seasonal variation in slaughter, the advantages of a uniform seasonal flow of slaughter were pointed out. From the standpoint of seasonal slaughter by these two groups during 1940, a definite advantage apparently was held by the interior packer.

Two possible factors may be suggested as causes for the less violent seasonal fluctuation in slaughter by interior packers. The fact that these interior plants on an average were smaller than the plants on the terminal markets, would indicate that their demand for livestock being smaller, they should be better able to maintain their slaughter volume at all seasons. The second factor to be considered would be that since these smaller interior plants were located in the country, they were in closer touch with the producer and therefore were able to maintain their slaughter volume by dealing personally with the farmers.

This portion of the study has shown that in Kansas the meat-packing industry has faced a more severe reduction in the quantity of livestock available for slaughter as a result of drouth than other areas in the United States. Packing plants at terminal markets, and particularly at Kansas City, have suffered a greater reduction in volume than plants located at interior points. The degree of seasonal variation in livestock marketings was also more serious for terminal plants than for interior plants.

LABOR IN KANSAS MEAT-PACKING PLANTS

The success of any packing house is vitally dependent upon the efficiency and loyalty of its labor force. The meat-packing industry demands a relatively large amount of highly skilled labor. Although many operations in the modern packing house have become mechanized, there are yet a great variety of operations which must be performed by hand. Skinning, splitting, and trimming are examples of a few of the operations in which manual dexterity and human judgment still play an important part.

The Importance of the Meat-packing Industry

As an Employer of Labor in Kansas

In Kansas, 23 percent of all wage earners in manufacturing industries were employed in meat-packing establishments in 1939 and they received 25.8 percent of all wages paid by manufacturing industries in the state. Approximately \$9,546,000 was paid to wage earners in the meat-packing industry in Kansas in that year. In addition, \$1,767,000 was paid to salaried employees, making a total of more than \$11,000,000 paid in wages and salaries by the packing industry in Kansas. Table 20 presents the relative importance of meat-packing among all Kansas industries in March, 1940.

Table 20. Relative importance of meat-packing among Kansas industries, as an employer of labor in March 1940./9

| Industry | Number of employees | Rank or order |
|---|---------------------|---------------|
| Meat products manufacturing | 11,800 | 1 |
| Crude petroleum and natural gas producers | 6,700 | 2 |
| Retail grocery and meats | 4,800 | 3 |
| Telephone communication | 4,400 | 4 |
| Motor vehicle dealers, retail | 4,300 | 5 |
| Petroleum refining | 4,200 | 6 |
| Flour and other grain mill products, mfg. | 3,900 | 7 |
| Utilities, electric light and power | 3,800 | 8 |
| Department stores | 3,700 | 9 |
| Oil & gas field contractors | 3,500 | 10 |

As far back as records are available, meat-packing has been a leading industry in Kansas. In 1885 the packing industry had already assumed the leading position which it now holds. In that year there were approximately 3100 workers employed in Kansas packing houses. The next most important manufacturing industry employed only 374. The number employed by the meat-packing industry declined somewhat in 1886 and 1887 but by 1888 had risen to 3500. In the next decade the meat-packing industry in Kansas more than doubled the number of workers employed and by 1899 provided work for 10,000 people. By 1904 the number of workers employed had increased to nearly 10,500 and in that year nearly \$6,000,000 were paid in wages. At that time there were 25 packing houses in the state, 10 of which were located in Kansas City. By 1919 there were more than 22,700 employed in meat-packing in Kansas. This was the peak year of employment for the packing industry of the state. The number dropped to about 12,000 in 1925 and to nearly 11,000 in 1929. With the beginning of the depression years and the drouth, employment in Kansas packing houses declined still further. The number employed fell to a low of 8,259 as reported by the Census of Manufacturers in 1939 (Fig. 32).

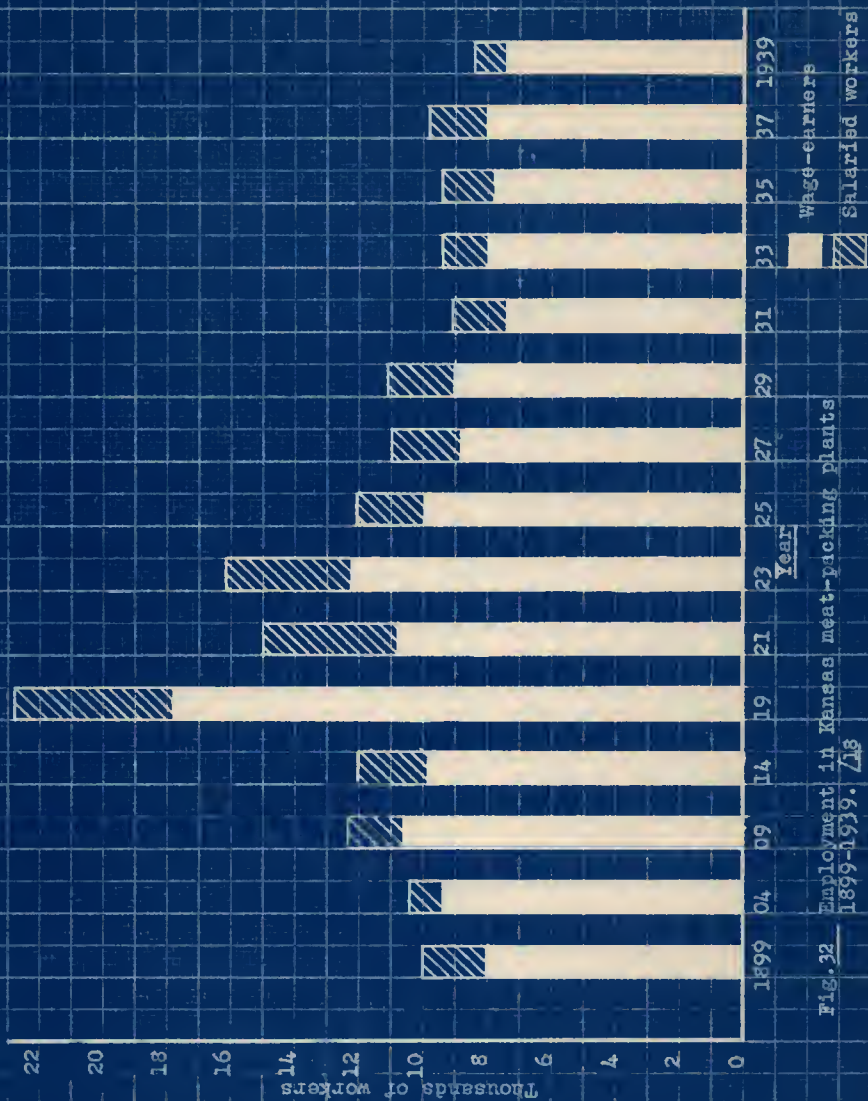


Fig. 32 Employment in Kansas meat-packing plants
1899-1939. 718

The importance of meat-packing as an employer of labor compared with other industries in Kansas has declined since 1899. In 1899 approximately 30 percent of all wage earners employed in industries in Kansas were employed in the packing industry. During the period since 1899 the proportion of all industrial wage earners that were employed by meat-packing plants has fluctuated between 20 and 30 percent. In 1939, 23 percent of the total number of wage earners in Kansas were employed in the meat-packing industry (Table 21).

Kansas ranks high as a meat-packing state. In 1939 Kansas ranked sixth among the states in the United States on the basis of the value of products produced by meat-packing plants. In that year six percent of the nation's total employment in the meat-packing industry was employed in Kansas and Kansas packing houses paid 5.5 percent of the total wages paid to meat-packing employees in the United States.

But since the turn of the century the relative importance of Kansas as an employer of packing house labor has been declining rather steadily. In 1939 Kansas employed less than one-half as large a proportion of the nation's total wage earners in meat-packing as it did in 1904 (Fig. 33). In 1904 Kansas employed 12.7 percent of all wage earners in meat-packing in the United States. By 1919 this had fallen to 11.1 percent, by 1929 to 7.4 percent, and in 1939 to 6.1 percent.

This indicates that the importance of Kansas as an employer of packing house labor in relation to the rest of the United States is declining. But the number of packing houses in Kansas has been increasing. Three conditions are important in explaining this situation. In the first place, while the number of packing houses in Kansas has been increasing the increase has largely taken place through the establishment of small packing houses employing but a relatively small number of wage earners. Second, in recent years there has

Table 21. Importance of Kansas packinghouse labor among all manufacturing labor in Kansas, and all meat-packing labor in the United States./18

| Year | Percentage of total meat- packing wage- earners in United States | Percentage of total meat- packing wages in United States | Percentage of total wage- earners in Kansas | Percentage of total wages paid in Kansas |
|------|--|---|--|---|
| 1899 | 11.9 | 10.7 | 29.9 | 27.9 |
| 1904 | 12.7 | 12.0 | 26.4 | 25.6 |
| 1909 | 12.1 | 11.6 | 23.9 | 22.6 |
| 1914 | 10.0 | 9.5 | 23.9 | 22.7 |
| 1919 | 11.1 | 1.0 | 29.1 | 28.5 |
| 1921 | 9.1 | 8.2 | 24.0 | 21.2 |
| 1923 | 9.2 | 8.3 | 23.8 | 21.3 |
| 1925 | 8.2 | 7.5 | 21.2 | 18.9 |
| 1927 | 7.4 | 7.0 | 19.3 | 18.8 |
| 1929 | 7.4 | 7.1 | 23.2 | 16.6 |
| 1931 | 6.9 | 6.3 | 20.4 | 19.3 |
| 1933 | 7.0 | 6.3 | 24.1 | 22.6 |
| 1935 | 6.6 | 6.0 | 25.2 | 26.3 |
| 1937 | 6.3 | 5.7 | 23.5 | 23.8 |
| 1939 | 6.1 | 5.9 | 23.0 | 25.8 |

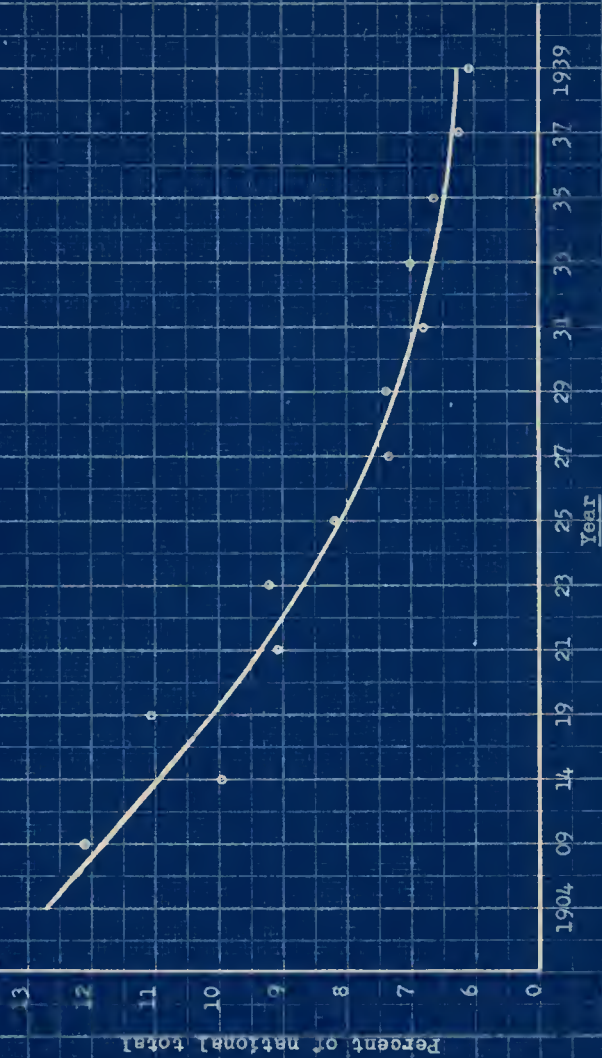


Fig. 34 Percent that number of wage-earners in Kansas packinghouses was of national total employment in packinghouses, 1904-1939. /13

been a reduction in employment by the large terminal packers because of the decline in livestock receipts on the markets at which they are located. The third condition responsible for reducing the importance of Kansas in the national picture as an employer of packing house labor is the fact that the packing industry has gained in other sections of the United States at the expense of the industry in Kansas. This undoubtedly has been a factor as can be seen from the progress of the meat-packing industry in states such as Iowa and California.

It is interesting to note the ratio of salaried workers to wage earners in the Kansas meat-packing industry. This is shown graphically in Fig. 34. In 1899 approximately 19 percent of the total employment in Kansas packing houses consisted of salaried workers. By 1904 this percentage had been cut in half. From 1904 to 1921 there was a steady increase in the proportion of total employment represented by salaried workers. Twenty-nine percent of the total employment consisted of salaried workers in 1921. This proportion decreased during the period 1921-1925, and in 1925, salaried workers represented about 18 percent of the total employment. From 1925 to 1937 the proportion of salaried workers varied between 16 and 19 percent of the total. However, in 1939 there was slightly more than 10 percent of the total employment represented by salaried workers, the lowest proportion since 1904. This might be taken as an indication of an attempt on the part of the packers to reduce office overhead. Insofar as this does not impair the efficiency of office operations, it would seem desirable.

Relative Rate of Change of Wages and Value of Product per Wage Earner

During the five years from 1899 to 1904, wages paid to wage earners in

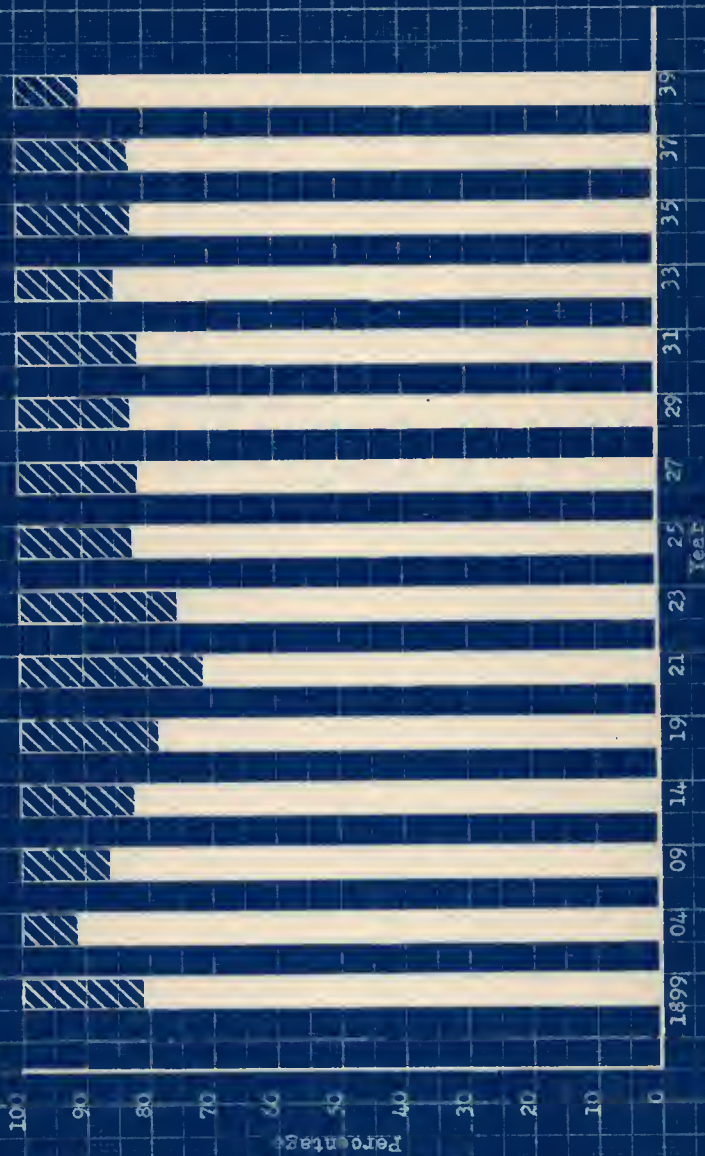


Fig. 14. Ratio of salaried workers to wage-earners in Kansas packinghouses, 1899-1939. 18

Wage-earners

Salaried workers

Kansas packinghouses increased at a rate more than double that of the increase in value of product per employee. Wages increased 16.9 percent and the value of the product per worker only 7.6 percent (Fig. 35). However, during the next five years conditions were reversed, and although wages still gained 7.4 percent, the value of product per wage earner increased 52.2 percent during the same period. In the period just preceding the World War, wages continued their upward trend, rising 7.9 percent from 1909 to 1914, but value of product per wage earner declined 1.7 percent during that period.

With the outbreak of the war, both wages and value of product started to rise, slowly at first, and then much more rapidly as the United States assumed an active part in the conflict. The increase in industrial activity accompanied by a relative scarcity of labor, greatly accelerated the increase in wage rates. Wages rose 96 percent while value of product per wage earner increased 56.5 percent. Average annual wages in the meat-packing industry in Kansas increased from \$597⁷ in 1914, to \$1,171 in 1919.

During the readjustment which took place immediately after the war, the value of product per wage earner declined sharply, falling off 25.1 percent by 1921, but at the same time the average annual wage actually increased one percent. With the return of men to employment and the recession of prices from their high war-time level, the increasing competition among laborers forced wages down 3.8 percent by 1923, while value of product per worker rose 2.3 percent.

Wages continued fairly steady from 1923 to 1925, but the value of product per worker rose 36.4 percent. During the next four years, wages and value of product per wage earner rose steadily together, each gaining about 13 percent by 1927, while by 1929 the value of product per worker had outgained wages by about five percent.

⁷Includes wage of part-time employees.

Product per employee, in thousands of dollars

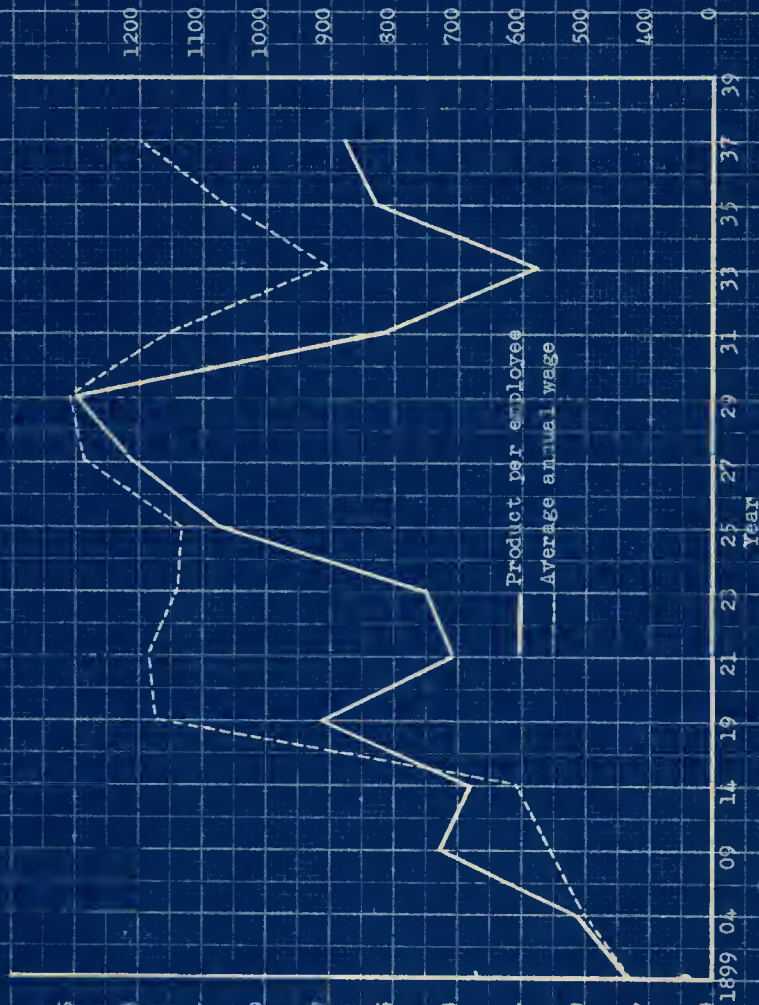


Fig. 35 Value of product per employee and average annual wage paid in Kansas packinghouses, 1899-1939. 118

with the break in the stock market and the beginning of the general industrial depression in 1929, both value of product per wage earner and average annual wage declined sharply. However, again as during the recession after the World War, the value of product fell off more and at a faster rate than did wages, declining 38 percent by 1931. Wages decreased only 12 percent. During the next two years, both factors continued downward, value of product per wage earner still dropping faster than average annual wage. Value of product dropped 33.9 percent while wages were lowered by 22 percent.

The low point was reached in 1933, and as before, the value of product per employee was much quicker to respond to the change in economic conditions, rising 53.3 percent by 1935, while wages were recovering by 19 percent. In the next two years the recovery continued with wages going up 12.4 percent, and value of product per wage earner gaining but 5.4 percent.

The cost of labor per unit value of product in the meat-packing industry tends to vary inversely with the prices of meat products. When prices of meat products are high, wages appear as a relatively small item of cost per unit value of product. However, wages do not tend to fall in proportion to decreases in the value of the product. Because of this relationship, in times when prices of meats are relatively low, wages per unit value of product appear to be a much larger element in processing costs.

Another factor affecting the amount of wages paid per \$1000 of product is the volume of product handled in terms of plant capacity. A plant slaughtering at or near its normal capacity should have a lower wage cost per unit of production than a plant operating at a level substantially below its capacity because of the differences in efficiencies which would result. To employ its labor force most efficiently, a plant must slaughter a sufficient volume of livestock daily to keep all workers busy at the job for which they are trained.

Labor cost per \$1,000 of product for Kansas and the United States are shown in Table 22 and Fig. 36. It can be seen that the general trend is upward. This seems to indicate that in spite of the supposedly great increase in the productivity of the packing-house worker, the cost of labor per unit of product has steadily increased.

Table 22. Wages paid per \$1,000 of product in Kansas and in the United States, 1899-1939./18

| Year | Wages paid per \$1,000 of product | |
|------|-----------------------------------|-------------------|
| | Kansas | United States |
| 1899 | \$46.18 | 42.60 |
| 1904 | 50.17 | 44.12 |
| 1909 | <u>35.11 low</u> | <u>37.18 low</u> |
| 1914 | 38.95 | 37.41 |
| 1919 | 40.78 | 49.33 |
| 1921 | 65.74 | 69.47 |
| 1923 | 61.80 | 64.80 |
| 1925 | 45.17 | 52.24 |
| 1927 | 45.28 | 52.85 |
| 1929 | 43.20 | 48.29 |
| 1931 | 61.39 | 61.68 |
| 1933 | <u>73.45 high</u> | <u>75.30 high</u> |
| 1935 | 56.23 | 57.76 |
| 1937 | 59.48 | 61.12 |
| 1939 | 66.35 | 60.99 |

The mechanization of packing house operations has undoubtedly increased the potential productivity of the packing-house worker. The increase in the cost of labor per \$1,000 of product can probably be attributed to two principal causes. First, and most important would be increased cost of labor occasioned by the rise in wage rates which has occurred. It is highly probable that the increase in the hourly wage rates has been great enough that it would tend to offset the savings of labor which have come as the result of technical improvements within the industry itself. The second factor which might tend to

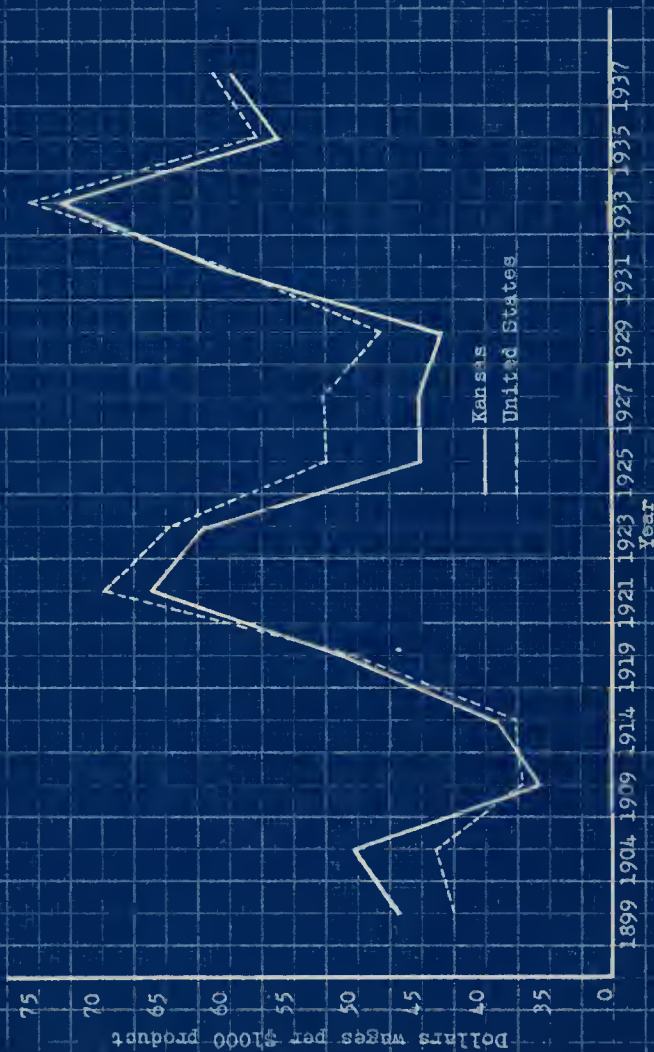


Fig. 36 Wages paid per \$1000 product in the meat-packing industry, 1899-1937. 2B

increase the labor cost per \$1000 of product would come through waste motion and loss of time occasioned by the modern "line" method of production which requires that the worker remain in one spot and wait for the material on which he works to pass before him. Often a worker will have to wait, standing idle, until the next piece of material on which he will work passes before him. The cumulative total of these short interruptions of work, would in the course of a day, probably add up to considerable time. Another loss of labor efficiency in the larger packinghouses is the time required to truck products from one department to another.

Production of Dressed Meat per Wage Earner

Figure 37 and Table 23 give the production of meat per wage earner in Kansas packinghouses compared to the average for the United States during the period 1921 through 1939. During the period from 1921 through 1929, the production of meat per wage earner was generally increasing, with Kansas apparently increasing its total production of meat per wage earner at a more rapid rate than did the United States. In 1929 the average production of all meats per worker in Kansas packinghouses was approximately 148,000 pounds, while in the United States it was 124,000 pounds. From 1929 to 1931 the production per worker in Kansas packinghouses declined to 141,000 pounds while the average for the United States rose to 135,000 pounds. Production per worker in Kansas declined to a low of 107,000 pounds in 1937 and to a low of 102,000 pounds in the United States in 1935. By 1939 production per wage earner had increased in Kansas to 122,000 pounds and in the United States to 127,000 pounds.

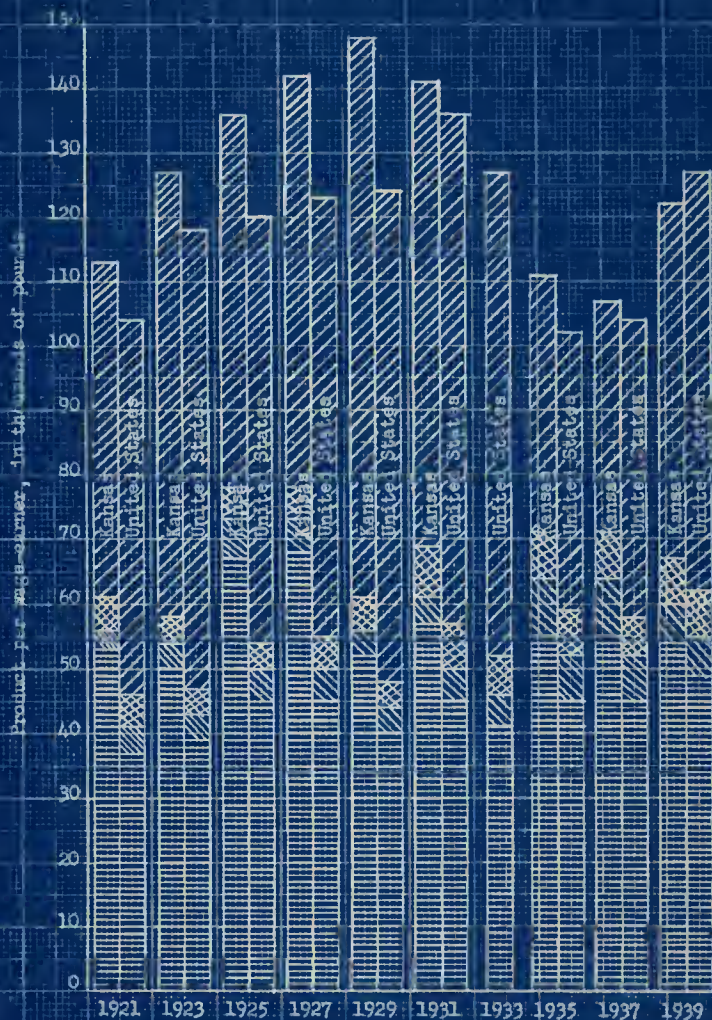


Fig. 37. Production of meat per wage-earner in Kansas packinghouses compared with the average for the United States, 1921-1939./18



Table 23. Dressed weight of livestock per wage earner in packinghouses of Kansas and of the United States, 1921-1939.¹³

| Year | Kansas | | | | Total | United States | | | | |
|-------------------|--------|--------|------|-------|-------|-------------------------------------|--------|--------|------|-------|
| | Cattle | Calves | Hogs | Sheep | | Thousands of pounds per wage earner | Cattle | Calves | Hogs | Sheep |
| 1921 | 53.4 | 3.3 | 51.8 | 4.7 | 113.2 | 37.2 | 3.7 | 58.7 | 4.8 | 104.4 |
| 1923 | 49.7 | 4.4 | 69.4 | 3.6 | 127.1 | 36.8 | 4.0 | 71.1 | 3.9 | 117.8 |
| 1925 | 67.0 | 6.0 | 58.3 | 4.8 | 136.1 | 45.1 | 5.2 | 65.3 | 4.4 | 120.0 |
| 1927 | 67.8 | 4.9 | 64.3 | 5.4 | 142.4 | 45.1 | 4.9 | 68.0 | 4.7 | 122.7 |
| 1929 | 52.4 | 3.5 | 85.9 | 6.2 | 148.0 | 39.6 | 4.4 | 74.7 | 5.0 | 123.7 |
| 1931 | 57.1 | 4.3 | 71.9 | 8.1 | 141.4 | 44.9 | 5.3 | 70.4 | 7.3 | 135.9 |
| 1933 ⁸ | | | | | | 41.3 | 4.8 | 74.1 | 6.4 | 125.6 |
| 1935 | 54.9 | 9.0 | 43.2 | 7.1 | 111.2 | 45.2 | 6.5 | 49.3 | 6.7 | 101.7 |
| 1937 | 54.9 | 9.1 | 36.0 | 6.9 | 106.9 | 44.5 | 6.8 | 44.1 | 6.2 | 103.6 |
| 1939 | 54.2 | 6.4 | 54.1 | 7.3 | 122.0 | 40.6 | 6.1 | 65.3 | 6.6 | 126.6 |

⁸ Information not available for Kansas.

From the production of the various classes of meat per wage earner in Kansas packinghouses several interesting conclusions may be drawn (Table 23). The production of beef per wage earner in Kansas packinghouses has remained fairly constant since 1921, averaging 56.6 pounds. The production of veal has increased from 3,300 pounds per wage earner in 1921 to 9,100 pounds in 1937 and 6,400 pounds in 1939. Production of lamb and mutton has also increased materially, production per wage earner being 4,700 pounds in 1931 and 7,300 pounds in 1939. The production of pork per wage earner was the principal reason for the variation in the total production of meat per wage earner in Kansas. Beginning with a production of 51,800 pounds of pork per wage earner in 1921, production increased to 85,900 pounds per wage earner in 1929 and then fell off to 36,000 pounds in 1937, rising to 54,100 pounds in 1939. This decrease in pork production has been due chiefly to the reduction in hog numbers in Kansas and the surrounding area since 1934.

Employment and Payrolls

Figure 38 brings out shifts in employment and payrolls for the large terminal and interior packers of Kansas since 1934. It also indicates the relative position of employment and payrolls in comparison with the averages of those items for the period 1934-1940.

In considering employment by large terminal packers the abrupt decline in numbers employed from 1934 to 1935 stands out. Using the average of the period 1934-1940 as 100, employment by large terminal packers declined from an index of 142 in 1934 to 94 a year later, a loss of 48 points. In 1936 employment was up to 100, the average for the period 1934-1940, but fell off in 1937 and 1938, standing at 86 in the latter year. In 1939 and 1940

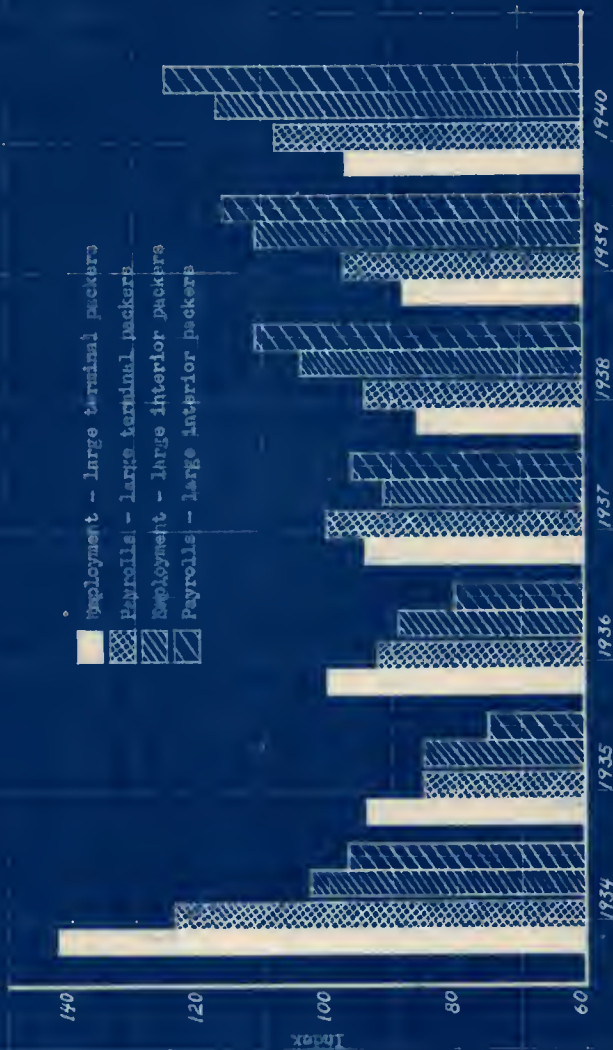


Fig. 2. Indexes of annual employment and payrolls of large terminal and interior packers, 1934-1940. /

Average of period 1934-1940 equals 100.

employment by large terminal packers increased, reaching an index of 97 in 1940.⁹

In observing employment of large interior packers, it can be seen that a different situation has prevailed. As with the terminal packers, employment decreased from 1934 to 1935. However, the loss in employment by this group was not so severe. The index fell from 103 to 85, a loss of only 18 points as compared to the 48 point loss of the large terminal packers. Then beginning in 1935, employment by the large interior packers started upward, and since then has continued in that direction at a relatively steady rate, reaching a level of 117 in 1940.

Annual average payrolls of these two groups of packers have not tended to vary in the same manner as did employment (Figs. 39 and 40).⁹ In the case of the large terminal packers, payrolls decreased much less than did employment from 1934-1935, falling from 124 to 85, a loss of 39 index points, compared to a loss of 48 points in employment. This relative gain in payrolls over employment could be attributed to one of two factors or both: (1) an increase in the number of man-hours worked per employee, and (2) an increase in the hourly wage rate. From 1934 to 1935 the relative gain of payrolls over employment was due entirely to an increase in the hourly wage rate as the average number of hours worked per week per wage earner decreased by 3.3 hours. The average hourly wage rose 2.4¢ from 1934 to 1935. Payrolls gained more than employment during the next year, increasing seven index points to a six-point increase in employment. This increase again was the result of higher wage rates, the increase from 1935 to 1936 being about three cents per hour.

⁹ Data obtained from the Kansas State Department of Labor under agency approval; 1934-1940=100.

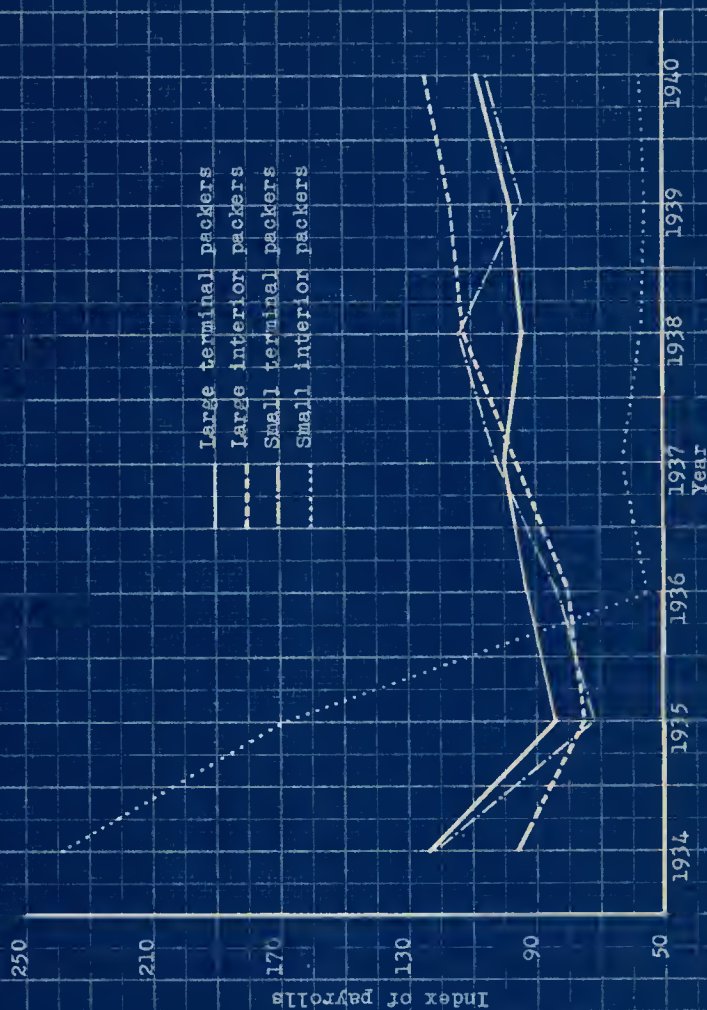


FIG. 39 Indexes of annual payrolls in Kansas packinghouses, 1934-1940. \angle
Average of period 1934-1940 equals 100.

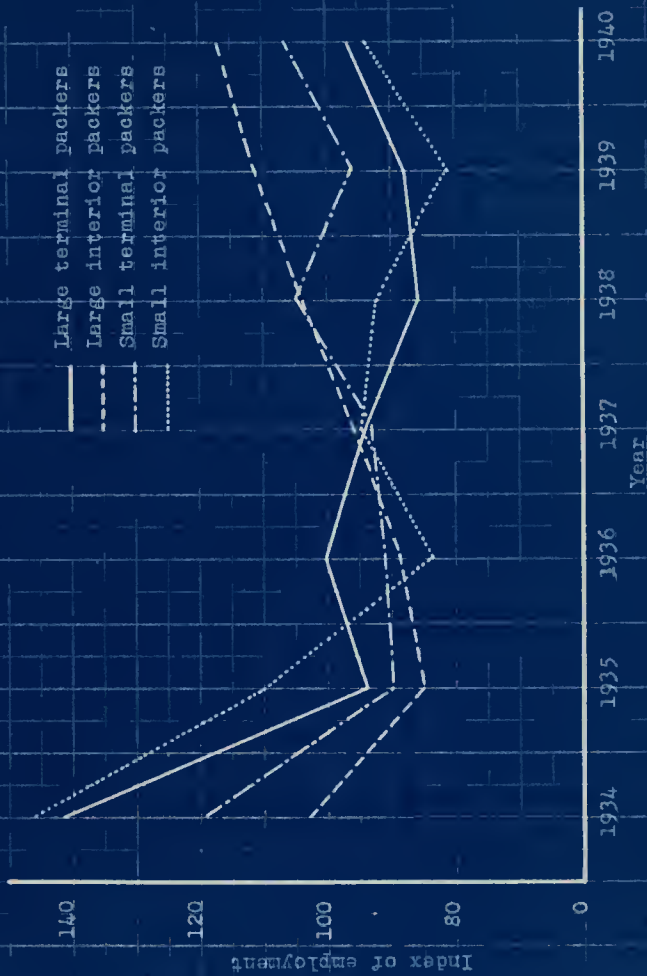


Fig. 40 Indexes of annual employment in Kansas packinghouses, 1934-1940.
Average of period 1934-1940 equals 100.

In 1936 a turning point in the employment-payroll relationship was reached. Employment in large terminal packinghouses decreased nearly seven percent from 1936 to 1937, but annual payrolls increased eight percent because of an increase in the rate of pay of 8.7¢ per hour. From 1937 to 1938 both employment and payrolls fell off, but payrolls were held to 1.5 points less decline than employment, again because of an increase in the hourly wage rate, this time of 3.5¢ per hour.

During 1939 and 1940 both employment and payrolls increased, but payrolls gained about 1.2 index points more than did employment. This time the increase was not due to an increase in the hourly wage rate, but an increase in the number of hours worked per week, wage rates declining about two cents per hour, but about one hour being added to the average working week.

It is significant to observe that essentially the same employment payroll relationships have existed for the large interior packers as for the large terminal packers. However, the degree of movement of these two factors has been somewhat different in each case.

From 1934 to 1935, both payrolls and employment of large interior packers decreased, but payrolls decreased relatively more than did employment. This decrease in payrolls was caused primarily by a reduction of about five cents per hour in the wage rate, and came in spite of an increase of three hours in the working week. This shift is just the opposite of that for the large terminal packers where payrolls gained over employment because of an increase of 2.4¢ per hour in the wage rate and in spite of a reduction of 5.3 hours in the working week. During the years 1936 through 1940, the employment-payroll relationship for the two groups of packers was essentially the same; the only significant difference being that in the case of the large interior packers,

the gain in payrolls over employment was caused by a steadily increasing wage rate, hours worked per week remaining relatively steady from 1936 through 1939 and decreasing by about two hours in 1940.

Frequency Distribution of Incomes of Packinghouse Employees

An analysis of the quarterly income groups of employees serves to indicate the relative proportions of the total employees which fall into each income group. This is a case study of the wage and salary reports submitted to the Division of Unemployment Compensation of the State of Kansas by 10 packers located at terminal and interior points throughout the state.

In comparing the distribution of income groups of large terminal and large interior packinghouses, some significant differences can be observed. Beginning with the wage group receiving less than \$100 per quarter, which probably consists mostly of part-time labor, it can be seen that the large terminal packers had a much greater share of their total employment (14.9 percent) in this group than did the large interior packers (6.4 percent) (Table 24).

Table 24. Percentage of total workers in four classes of packers falling into various income groups.¹⁰

| Income group: | Terminal | | | | Interior | | | |
|---------------|----------|---------|-------|---------|----------|---------|-------|---------|
| | Large | | Small | | Large | | Small | |
| | Total | Average | Total | Average | Total | Average | Total | Average |
| less \$100 | 29.88 | 14.94 | 50.92 | 16.97 | 12.06 | 6.48 | 63.91 | 22.97 |
| 100-199 | 13.03 | 6.51 | 56.92 | 18.97 | 34.01 | 17.00 | 90.32 | 30.11 |
| 200-299 | 51.54 | 25.77 | 69.48 | 23.16 | 62.21 | 31.10 | 78.54 | 26.18 |
| 300-399 | 73.93 | 37.00 | 62.00 | 20.66 | 64.02 | 32.01 | 41.19 | 13.73 |
| 400-499 | 18.38 | 9.19 | 36.54 | 12.18 | 16.70 | 8.35 | 17.39 | 5.79 |
| 500-749 | 9.28 | 4.64 | 18.71 | 6.24 | 6.03 | 3.02 | 2.80 | .90 |
| 750-999 | 2.95 | 1.48 | 1.43 | .49 | 2.01 | 1.00 | .90 | .30 |
| 1000-1499 | .95 | .48 | | | 1.44 | .74 | | |
| 1500-2499 | | .06 | | | 0.544 | .277 | | |
| 2500-4999 | | .05 | | | | .023 | | |

¹⁰

Data obtained from the Kansas State Division of Unemployment under agency approval in accordance with Section 714(g) of the Kansas Unemployment Compensation Act.

In the next income group, \$100 - \$199, the effect of the lower wage rates of the large interior packers can be seen. In comparison with the large terminal packers, the large interior packers employed a much greater proportion of their labor in this group—17 percent as compared to 6.5 percent for the large terminal packers.

The effect of the lower wage rate of the large interior packers carries on through the next two income groups. In the \$200 to \$299 wage group, the large interior packers placed 31 percent of their workers, while the large terminal packers had but 26 percent. In the next higher wage group, \$300 to \$399, the effect of the higher hourly wage rates of terminal packers is seen again. This group included 37 percent of the total employment of the large terminal packers, and 32 percent of the employment of the large interior plants, and represented the greatest employment in any one income group for both classifications of large packers.

The \$300 to \$299 and the \$300 to \$399 wage groups included the great mass of plant workers. The groups receiving \$400 or more per quarter included plant foremen and salaried employees, which constituted a relatively small part of the total employment. There tended to be less absolute variation between the two classifications of packers regarding the proportion employed in each of these income groups.

In the \$400 to \$499 quarterly income classification, the large terminal packers had about nine percent of their total employees, and the large interior packers about 8.5 percent. In the \$500 to \$749 group, the large terminal packers had 4.6 percent and the large interior packers three percent. In the \$750 to \$999 group the large terminal packers had 1.5 percent and the large interior packers one percent. In the groups receiving more than \$1000 per quarter, about five percent of the total employees of large terminal packers

were found and about one percent in the case of large interior packers.

These higher income groups give some indication of the cost of management of these two classifications of packers. It was shown that the \$400 to \$499 group contained about the same percentage for both classification of packers. This would include plant foreman and minor office help and should be expected to be about the same since the amount of this type of supervision and white collar work required probably varies directly with the employment in the plant.

In the groups receiving more than \$500 but less than \$1000 per quarter, there was a definite tendency for the large terminal packers to place a greater proportion of their employment in these groups than did the large interior packers. This probably results from the national set-up of these large terminal packers, which requires a larger proportion of minor executives to interpret and put into operation the orders of the central office, and to see that the proper records are kept and that the more numerous reports are sent in the proper form and at the required time.

In the group receiving more than \$1000, representing the general manager, the plant manager, the office manager, and other executive officers, it can be seen that the large interior packers tended to employ a greater percentage of their total in this classification. This probably results from two causes: (1) the smaller size of the large interior packers, which would tend to weight the necessary executives more heavily in relation to the total, and (2) the fact that the major policy-determining officials of the large terminal packers are found at the company's central office and therefore are not represented in the Kansas employment figure.

Much the same relationship regarding employment by income groups prevailed between small terminal and small interior packers as did between the large

terminal and the large interior packers, the small terminal packers placing a higher percentage of their employment in the higher wage groups than did the small interior packers.

There was a significant difference regarding the quarterly wage group in which each of these four classes of packers placed the largest proportion of their total employment. Both classes of large packers had the greatest percentage of their workers employed in the \$300 to \$399 wage group, with the large terminal packers employing five percent more in this group than did the large interior packers.

The small terminal packers employed the greatest number of their workers in the \$200 to \$299 quarterly wage class, while the small interior packers had the greatest proportion of their employment falling into the \$100 to \$199 quarterly income group.

Seasonal Variation in Employment and Hours Worked in Kansas Packinghouses

During the short period for which data were available, there was found an appreciable difference in the seasonal variation in employment of large and small, and terminal and interior packers (Fig. 41). There was apparently less seasonal variation in numbers employed in the case of the large interior and the small terminal packers, large interior packers varying but 5.4 percent and small terminal packers but 4.1 percent during the four years 1937 to 1940. Large terminal packers had a seasonal variation in employment of 10.8 percent and small interior packers 15.7 percent.

There was a definite tendency for the seasonal peak in employment of large packers to occur at a different time than did that of small packers. Both large terminal and large interior packers had their seasonal peak in

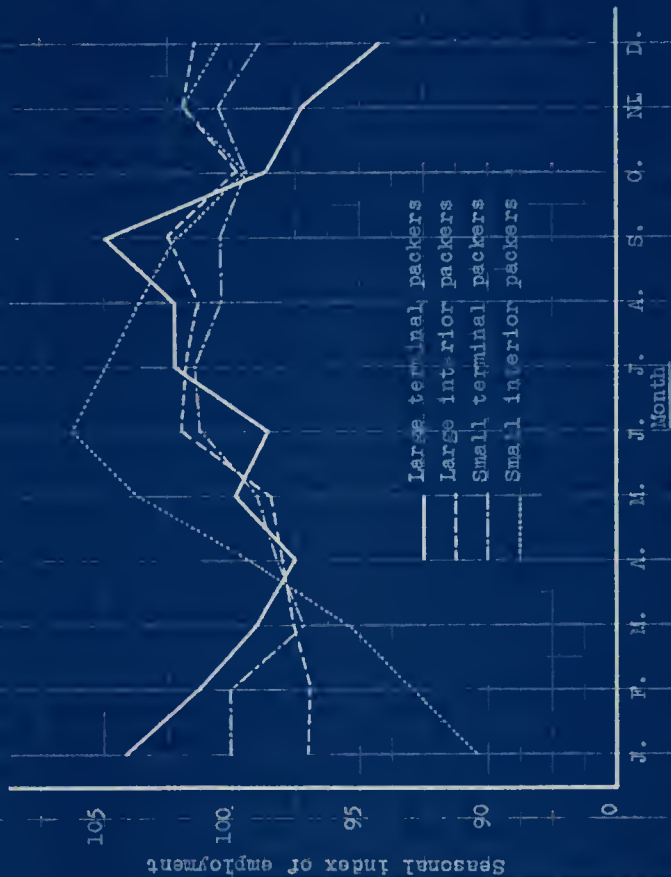


Fig. Seasonal indexes of employment in Kansas packinghouses.
Average of period 1937-1940.

employment in September, whereas the peak for small interior packers came in June and that for small terminal packers through both June and July. Although the peak in seasonal employment of these latter two classes of packers comes at different times, the seasonal low in employment tends to come at more nearly the same time. The seasonal low for the large interior and small interior packers tends to come in January -- the low for the large terminal packers in December, and the low for the small terminal packers in March.

Employment by all four groups of packers was greatest during the summer months; June, July, August and September averaging 2.2 percent above the average for the year. The low in employment came during the months February, March, April, and May, the index for these months averaging about 1.6 percent lower than the average for the year.

There does not seem to be great seasonal variation in the number of hours worked per week per employee in Kansas packinghouses during the years 1935-1940 (Table 25).

Table 25. Seasonal indexes¹¹ of weekly hours worked per wage earner in Kansas packinghouses, 1935-1940:¹²

| Month | Packer classification | | | |
|-----------|-----------------------|-------------------|-------------------|----------------|
| | Large terminal | Large interior | Small terminal | Small interior |
| January | 101.2 | <u>104.6 high</u> | <u>98.6 low</u> | 100 |
| February | <u>96.3 low</u> | <u>96.2 low</u> | 99.0 | 100 |
| March | 99.8 | 99.3 | 99.6 | 100 |
| April | 101.3 | 99.8 | 100.0 | 100 |
| May | 101.3 | 100.3 | 100.6 | 100 |
| June | 98.6 | 99.0 | 101.1 | 100 |
| July | 99.5 | 99.5 | 99.7 | 100 |
| August | 100.5 | 98.9 | 99.4 | 100 |
| September | 100.0 | 101.6 | 100.5 | 100 |
| October | 99.2 | 98.9 | <u>104.3 high</u> | 100 |
| November | 99.0 | 98.1 | 101.0 | 100 |
| December | <u>101.5 high</u> | 103.2 | 99.7 | 100 |

¹¹ Six month moving average, two month centered, average of three model years.

¹² Data obtained from the Kansas State Department of Labor under agency approval.

In considering the number of hours worked per week per wage earner in large terminal and large interior packing houses, there was a tendency toward the working of more hours per week in December and January than in other months. Similarly, the month during which the least number of hours worked per week, February, was the same for both large terminal and interior packers.

The large interior packers had a considerably greater range in the index of hours worked than did the large terminal packers, their range being 8.4 percent compared to a range of 5.2 percent for the large terminal packers.

In the case of the small terminal packers, the month in which the greatest number of hours per week was worked by each wage earner was October. The two periods, April, May, and June, and September, October, and November were relatively high, and the least number of hours were worked in January.

Small interior packers reported no appreciable variation in the number of hours worked per week. For the most part, these small interior packers employ only a few men, and often the packers have other interests such as a farm, an auction sale, or some other enterprise on which he can employ his packinghouse workers at times when little slaughtering is being done. This is a definite advantage in that by guaranteeing steady employment, the small packer can get experienced help at a reasonable wage.

Hourly Wage Rates in Kansas Packinghouses

In general, the trend in hourly wage rates in Kansas packinghouses has been upward since 1934. However, in classifying the packing industry into large and small, terminal and interior packers, it can be seen that the movement of wage rates has varied for each class. Wage rates for the large terminal packers have shown the most consistent movement, due perhaps in part to

the influence of labor unions. As shown by Fig. 42, based on an average of the period 1934 to 1940 as 100, the wage rates of large terminal packers rose fairly steadily from an index of 84.6 in 1934 to a high of 111.3 in 1938, or a gain of 17.5 cents per hour (Table 26). Wage rates declined about four index points, or 2.5 cents, from 1938 to 1939, and remained practically unchanged through 1940.

In the case of the large interior packers, the hourly wage rates declined from an index of 102.4 in 1934 to a low of 89 in 1936, a loss of about seven cents per hour. From 1936 to 1937 the wage rates of this group of packers increased sharply, gaining about 12 index points, or six cents per hour. From 1937 to 1939 wages were increasing slightly, but in 1939 there was a sharp up-turn, this time representing a gain of eight index points, or four and one-half cents per hour.

In comparing the actual wage rates of the large terminal packers with those of the large interior packers, it was found that as an average for this period from 1934 to 1940, terminal wage rates were about 13 cents per hour above that paid by the large packers at interior points. In view of the importance of labor as a part of processing costs in the packing industry this gave the interior packer a decided advantage in his operations.

In the case of the small terminal packers, as would be expected, the hourly wage rates of this group tended to move in sympathy with changes in the rates of the large terminal packers. Starting from an index of about 89 in 1934, wage rates increased steadily until 1938, reaching a peak of 111.4, which was one-tenth of a point above the index of wages for the large terminal packers, and about 12½ cents above the 1934 rate. From 1938 to 1939 wage rates for this group of packers declined about 10 index points, or about six cents per hour. From 1939 to 1940 wages were slightly upward, gaining about one and one-half cents per hour. In general, wage rates of small terminal packers averaged about nine cent

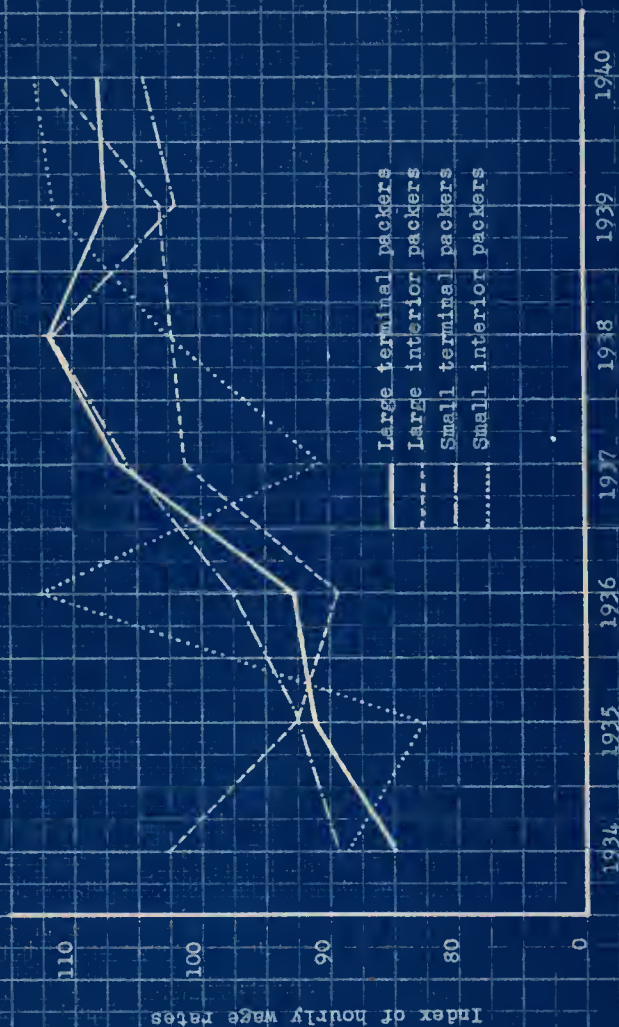


Fig. 42 Indexes of hourly wage rates in Kansas packinghouses, 1934-1940.

Average of period 1934-1940 equals 100.

Table 26. Trend in hourly wage rates of Kansas packinghouse employees, 1934 to 1940, inclusive, classified by size and location of packers.¹²

| | | Actual average annual wage rate (cents) per hour. ¹³ | | | | | | |
|------------------------------|--|---|-------|-------|-------|-------|-------|-------|
| Packer group | | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | 1940 |
| Large terminal ¹⁴ | | 55.2¢ | 57.6¢ | 60.6¢ | 69.2¢ | 72.7¢ | 69.9¢ | 70.1¢ |
| Large interior | | 53.3¢ | 48.0¢ | 46.4¢ | 52.6¢ | 52.9¢ | 53.3¢ | 57.6¢ |
| Small terminal | | 49.9¢ | 51.5¢ | 54.5¢ | 59.1¢ | 62.5¢ | 56.9¢ | 58.3¢ |
| Small interior | | 40.1¢ | 37.5¢ | 50.8¢ | 40.9¢ | 46.4¢ | 50.4¢ | 50.9¢ |

¹²Ibid.

¹³Does not include salaries of office workers.

¹⁴"Terminal" includes Kansas City and Wichita packers only.

below the hourly rates of the large terminal packers, but about four cents above the rates of large interior packers.

It was difficult to determine trends in wages of small interior packers. There was little consistency in changes in wage rates in this group. The low averaged about 25 cents per hour, and the high about 70 cents per hour for this period. This inconsistency probably arose from two main causes: (1) the great variation in wage policies among these packers, and (2) the fact that they were widely scattered, and that local wage rates tended to vary with size and location of towns.

Turnover in Employment

Turnover in employment is a relatively important factor influencing the success of any packinghouse, because much of the labor employed in the packing industry requires special training for the job.

The process of training a skilled packinghouse worker involves considerable expense to the operator, largely through the loss of efficiency and the slowing up of the work occasioned by the introduction of the new employee. Packinghouse operations, as they exist today, involve the possession of a manual dexterity upon the part of the worker which improves as he gains experience by actually working on the job. Therefore, it is to the packer's advantage to retain these skilled workers as long as they are capable of performing their work efficiently. It is highly desirable that the rate of turnover in this type of labor be kept at a minimum.

Figure 43 shows the average rate of turnover in Kansas packinghouses, by large and small, terminal and interior packers, for the period 1937 to 1940.¹⁵

¹⁵ Data obtained from the Kansas State Division of Unemployment Compensation under agency approval in accordance with Section 74(g) of the Kansas Unemployment Compensation Act.

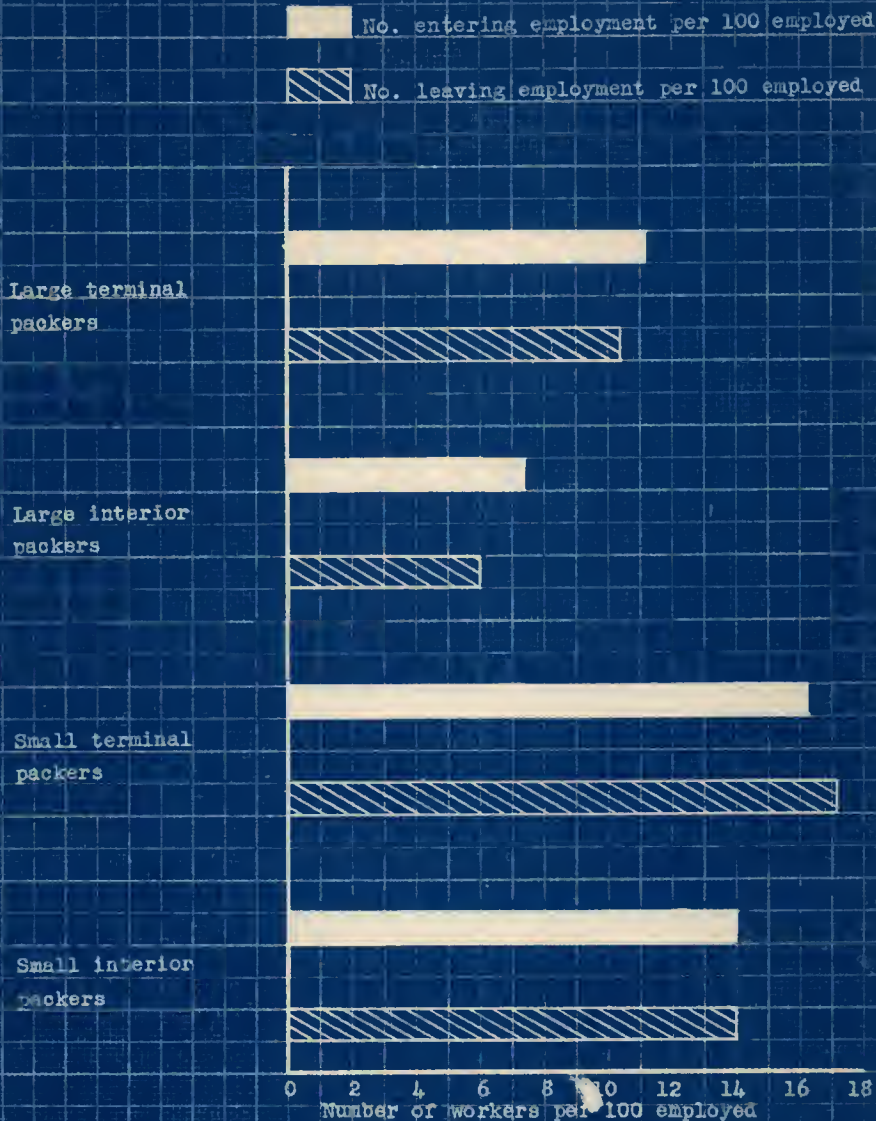


Fig. 13 Numbers of workers entering and leaving Kansas packinghouses per 100 workers employed, 1937-1940. /

The turnover in employment has been expressed in numbers of workers entering and leaving employment per 100 workers employed throughout this four-year period. Also it serves to show the net gain or loss in numbers employed.

Two generalizations can be made from Fig. 43: (1) the turnover in employment of the large packers was less than that of the small packers, and (2) the turnover in employment of interior packers was less than that of terminal packers.

Comparing large terminal and large interior packers, the rate of turnover for large interior packers was considerably less than that of the large terminal packers. As an average for the period 1937 to 1940, 7.3 workers entered the employment of large interior packers per 100 employed, while but six workers left, representing a net gain of 1.3 percent in employment. Larger terminal packers during this same period, had 11.1 workers entering employment per 100 employed, and 10.2 leaving, a net gain of 0.8 percent.

In the case of the small packers, much the same situation has prevailed, with the exception that instead of gaining in employment, both groups of small packers lost slightly during this period. From 1937 to 1940, 13.93 workers entered the plants of small interior packers for each 100 workers employed throughout the period, while 14 left, resulting in a net loss of 0.1 percent in employment.

As an average for the same period, small terminal packers had 16 workers entering employment for each 100 workers employed throughout the period, and lost 17.1, representing a net loss of 0.9 percent in employment.

Available Labor Supply

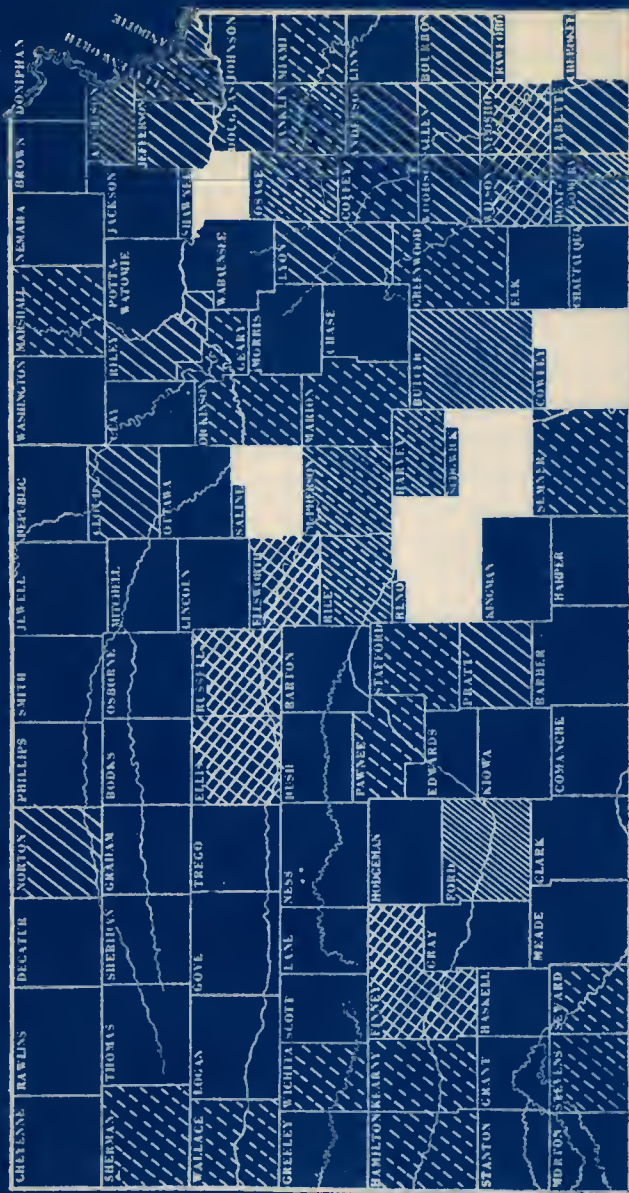
The availability of an adequate supply of labor is one of the basic

factors influencing the choice of a location for a packinghouse. Possibly the first indicator of the available labor supply which should be considered would be the relative density of human population. Figure 44 shows the density of human population in number per square mile for 1940. From this figure it can be seen that the present meat-packing centers are located in the areas of most dense population. Wyandotte County was by far the most thickly populated, having 937 people per square mile. Shawnee County was second with 177, and Sedgwick County third with 137 people per square mile. The entire western third of the state, with the exception of Norton, Ford, and Seward Counties, had less than 10 people per square mile.

Another important factor affecting the supply of available labor is unemployment. The last complete study of unemployment in Kansas was made in 1937. Although these data are now obsolete, one or two general relationships may be pointed out. In considering the age of the unemployed, it was found that it was invariably in the 20 to 24 age group that the greatest number of totally unemployed were found. For the state as a whole, the greatest number of emergency workers was found in the 15 to 19 year class, with the 20 to 24 year class a close second. However, in Kansas City and Wichita, the greatest number of emergency workers came in a much older age group, 40 to 50 years.

As with total unemployment, partial unemployment tended to be most concentrated in the 20 to 24 year age group. Among the various classes of labor that were unemployed, common labor was by far the largest, being half again as large as the skilled or semi-skilled unemployed labor groups.

Data from the State Division of Unemployment Compensation give a picture of unemployment benefits paid in Kansas counties per 100 population in 1939. Figure 45 shows that there were seven counties: Cherokee, Cowley, Crawford, Reno, Saline, Sedgwick, and Shawnee, that had 19 percent or more of their



Legend



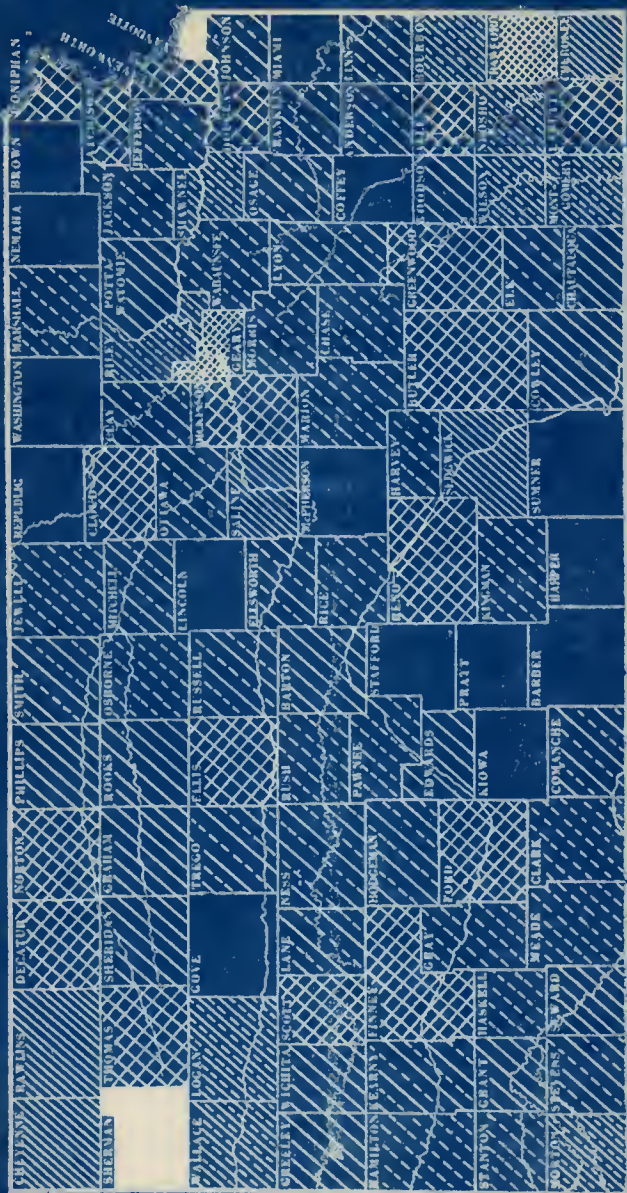
Fig. 45 Unemployment benefits paid in Kansas
counties per 100 population, 1939, /9

population receiving unemployment benefits in 1939. Other counties having 16 to 12.9 percent of their population receiving unemployment benefits were: Atchison, Butler, Ford, Montgomery, and Wyandotte. There were 50 counties, most of them in the western half of the state that received less than five unemployment benefit payments per 100 population.

A somewhat different aspect of the unemployment situation in the state may be obtained from registrations with the Kansas State Employment Service. These registrations represented workers looking for jobs who were either partially or totally unemployed, or were employed at the present, but were looking for another job. Figure 46 shows registration per 1000 population with the Kansas State Employment Service by counties as of April 30, 1941. In interpreting this map, it must be remembered that it shows registrations per 1000 population and therefore cannot be taken as a representation of the actual number registered per county. A comparison of Fig. 46 with Fig. 44 density of population, will help to clarify this relationship.

Registrations per 1000 population with the Kansas State Employment Service on April 30, 1941 ranged from more than 70 in two counties, Sherman and Wyandotte, to less than 15 in 15 counties.

Table 27 presents a frequency distribution of registrations with the Kansas State Employment Service by counties as of April 30, 1941. In observing the frequency of occurrence among the various groups classified as to the number seeking employment per thousand population, it was found that eighty-six of the 105 counties in Kansas had less than 40 people registered with the Kansas State Employment Service.



Registrations per 1000 population



Fig. 46 Registrations per 1000 population
with the Kansas State Employment
Service, by counties as of
April 30, 1941.

Table 27. Frequency distribution of registrations with the Kansas State Employment Service, by counties as of April 30, 1941.¹⁶

| Number seeking employment per thousand population | Frequency of occurrence (number of counties falling in each group) |
|--|--|
| Less than 20 | 35 |
| 20 - 39.9 | 51 |
| 40 - 59.9 | 15 |
| 60 and more | 4 |

¹⁶Data obtained from the Kansas State Employment Service, June, 1941.

In the meat-packing industry itself, there were registered with the Kansas State Employment Service 171 persons qualified in semi-skilled occupations and 868 persons qualified in unskilled occupations in slaughtering and preparation of meat products.

This study of labor in Kansas meat-packing plants has shown that more people were employed in the meat-packing industry than in any other manufacturing industry in the state as recently as 1939. However, the importance of the industry as an employer of labor has declined during the past few decades. There seems to have been no striking improvement during the last several years in the efficiency with which labor is used in the packing industry when it is measured in terms of total pounds of product per worker. Increases in the amount of processing done at the plant and in the quality of the product may have offset any increase in efficiency measured in those terms.

Changes in wage rates tended to lag behind changes in the value of the product of the industry. Wage rates per hour have shown a tendency to advance in recent years. Large terminal packing plants tended to have a higher wage

scale than other classes of plants. Large interior plants had a lower rate of turnover in employment and less seasonal variation in employment than other classes of plants. This would seem to give large interior plants an advantage as far as labor costs are concerned.

SUMMARY AND CONCLUSIONS

1. A fundamental factor which influences the prosperity of the meat-packing industry is the volume of livestock available for slaughter. Trends in the shipment of livestock off farms in Kansas and adjacent states indicate that Kansas has suffered a greater reduction in its shipments than have the surrounding states. The greatest reduction in cattle numbers has been in the Flint Hills region, particularly in the number of steers. Although there was a general decline in hog numbers over the entire United States during the period following 1933, the percentage of decline in Kansas was much greater than that of the nation as a whole. The relative decline in hog numbers was most severe in those areas having the most hogs with the northern tier of counties from Brown County west to Decatur County having a more severe loss than any other area within the state. Chiefly responsible for this reduction in hog numbers was the decrease in the quantity of feed grains produced during the drouth period. The number of sheep and lambs on farms in Kansas has been increasing in recent years with greatest increase in the south-central part of the state.

2. The decline in livestock numbers has been felt most keenly at the terminal markets. The increase in number and importance of livestock auctions and of other interior market outlets also have operated to reduce the volume of livestock received at the terminal markets. Apparently the Kansas City market has suffered a comparatively greater loss in the volume of livestock handled than has the Wichita market. Neither market has regained the volume of livestock which it had lost since the late twenties.

3. Seasonal variation in slaughter is an important factor affecting packinghouse efficiency. Considerable seasonal variation in the time of marketing

each class of livestock was found. The interior packers were able to operate with much less seasonal variation than were packers on the terminal markets.

4. In 1939, the meat-packing industry employed 23 percent of all wage earners in manufacturing industries in Kansas and paid 26 percent of the total wages. However, in 1904 Kansas employed 12.7 percent of all wage earners in the meat-packing industry in the United States, while in 1939 Kansas employed only 6.1 percent of the total.

5. It was found that wage changes lag far behind changes in the value of the product of the industry both when the value of the product is rising and when it is falling. Since 1934 large interior packers have increased employment to a level even higher than in 1934, small terminal packers have regained part of their loss, and large terminal and small interior packers have remained about steady.

6. Large packers tended to have a larger proportion of their employees in the higher wage brackets than smaller packers, and terminal packers tended to have a larger proportion of their employees in the higher wage brackets than interior packers. Apparently there was less seasonal variation in employment in the case of large interior and small terminal packers than in the cases of large terminal and small interior packers.

7. Wage rates of large terminal packers averaged about 13 cents per hour higher than those paid by large interior packers. Wage rates of small terminal packers averaged about nine cents per hour lower than those of large terminal packers but four cents per hour higher than those of large interior packers. Wage rates of small terminal packers varied greatly.

8. Turnover in employment per 100 workers employed tended to be less for large packers than for small packers and less for interior packers than for terminal packers.

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